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Intended as a flexible instrument, this guide suggests approaches for providing (1) meaningful occupational education throughout the junior high and high school structure, (2) opportunities for attaining entry level occupational competency in the secondary education complex, and (3) occupational education at the high school level which is appropriate to continuation beyond high school. On the basis of (1) the adoption of the occupational cluster concept which involves its grouping of occupations with identical or similar skill and knowledge requirements, (2) the implementation of a program of occupational exploration in grades 7 through 10, (3) the availability of adequate guidance and counseling, and (4) the provision of introductory courses at the ninth and 10th grade levels, a pattern of occupational education for secondary schools is suggested and approaches to organization, content, scope, and sequence of 12 cluster-based occupational curriculums are presented. The roles of high school occupational programs are identified as providing specific preparation for those who drop out and those who do not continue beyond high school, and a complementary learning experience to those who continue their occupational education. The alignment of the 12 curriculums with typical community college programs is illustrated, and the development of agriculture education from grade 9 through the community college program is presented schematically. (JK)

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GUIDE TO STRUCTURE AND ARTICULATION
OF
OCCUPATIONAL EDUCATION PROGRAMS

(GRADES 7 THROUGH 12 AND POST-HIGH SCHOOL)

ED023856

STATE DEPARTMENT OF EDUCATION
Division of Community Colleges
and Vocational Education
Salem, Oregon 97310

FOREWORD

The increasing emphasis upon vocational education that has characterized developments in education during the present decade has produced a notable expansion in the quantity and improvement in the quality of programs in the nation and in Oregon. However, in reality the task has only begun. The major part of it lies before us.

It was perhaps inevitable that early efforts to expand and improve vocational education would do more to delineate problems and determine their dimensions than it would to solve them. This fact in no way minimizes the importance of the expansion and improvements that have been made. The identification and analysis of needs and problems are in themselves significant achievements.

The thrust for improvement generated by the Vocational Education Act of 1963 has been instrumental in focusing attention upon areas of our educational system that are in urgent need of reform if we are really to serve all the individuals in our complex technological society. The work that has been done in Oregon and throughout the nation forcibly demonstrates the need for a blueprint to achieve a major overhaul of present structure and practices in secondary and post-high school education--to discover ways to integrate the occupational preparation of all individuals into a relevant structure of total education and to break out of the traditional concept of public education as twelve years of regimented academic instruction.

The conception and guidelines developed in this publication are in full accord with these aims. The Guide to Structure and Articulation of Occupational Education Programs can be a major instrument for achieving them in Oregon.

The Guide was developed by the Staff of the Division of Community Colleges and Vocational Education, under the direction of Robert O. Hatton, Assistant Superintendent, and Wm. G. Loomis, State Director of Vocational Education. Dr. Leon P. Minear gave encouragement and support to the project during the time that he was Superintendent of Public Instruction. It was approved by the State Board of Education on April 10, 1968.

Jesse V. Fasold

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PREFACE

In some respects, the Guide to Structure and Articulation of Occupational Education Programs is a departure from the type of program guide traditionally developed in education. For the most part, its emphasis is not upon problems of implementation or procedural detail; and, as stated in the Introduction, much of it is devoted to suggesting approaches and encouraging innovation and experimentation. However, the Guide is intended to furnish a conception and goals to be served by these approaches and innovations.

From its inception, the Guide has been designed to provide, first, a conceptual frame work for a dramatic expansion and improvement of occupational education in Oregon and, second, flexible guidelines designed to help translate the conception into operational reality.

The problems involved in providing expanded and improved occupational education for all students in our educational system will not be solved by a fragmented attack mounted from diverse and isolated points of view. Neither will they solve themselves. The solutions depend upon an orderly, coordinated effort directed at the source of the problems. It is this kind of effort that this Guide seeks to bring about.

In our society and in this stage of our history, the problem of bridging the gap between education and work is everywhere acute and at bottom, everywhere the same. However much situations and circumstances may differ in detail from one locality or area to another, there is a common core of problems that requires a unified: conception if we are to mobilize and coordinate our resources effectively. Development of a carefully structured, fully articulated program of occupational education is vital not only to young people and adults in our society today, but to the educational agencies--at all levels--designed to serve them.

The major purpose of this Guide is to provide the conception and direction required. If it succeeds in this and acts as a catalytic agent for continuing constructive development of occupational education in Oregon, it will have fulfilled its intended role as the basic document for program expansion and improvement.

It is not possible to give adequate recognition to all the individuals who have made contributions to the Guide's development. Three drafts have been prepared, and each has been the subject of extensive review and discussion. The first draft was examined and critiqued by the Leadership Seminar at Albany in February, 1967; and the second was studied at the Leadership Workshop held in April, 1967. In addition, the second draft was the sole topic of area conferences held in Salem, Portland, Lebanon, Eugene, Roseburg, and Pendleton. In each of these area conferences, participants in the Leadership Workshop met to discuss and critique the material included.

In both the Leadership Seminar and the Leadership Workshop, participants were selected leaders in education representing local school districts, community colleges, the State System of Higher Education, the State Department of Education, labor and industry.

In addition, throughout the period of the Guide's development, the State Advisory Council for Vocational Education in Oregon has been informed of and involved in the development of concept and direction. Members of the Council who have graciously given of their time to review the final draft of the Guide are: Mr. Orville R. Bailey, Superintendent of Schools, Scappoose; Mr. Jack E. Brookins, President of Southwestern Oregon Community College, Mr. Kenneth L. Lewis, controller for Al Peirce Company, Coos Bay; Mrs. Mary Pease, Business Representative, Retail Clerks Union Local #201, Eugene; and Mr. Marvin Rasmussen, Principal of Benson Polytechnic High School.

The constructive counsel and criticism provided by the members of each of these groups are gratefully acknowledged.

Development of the Guide has involved all staff members in the Division of Community Colleges and Vocational Education. General coordination of the project was the responsibility of Al Ringo, Program Development Supervisor. Invaluable assistance was rendered by Darrell Ward, of the Division of Continuing Education, who coordinated the Leadership Seminar and the Leadership Workshop, and Maurice Burchfield, of the Division of Instruction, who represented that Division as a consultant to the project. We wish to especially acknowledge the contributions of Dale Pinckney, Consultant Course and Curriculum Development, whose work throughout the project and special efforts and commitment in the final preparation of this publication have materially improved its value.

ROBERT O. HATTON
Assistant Superintendent
Division of Community Colleges
and Vocational Education

WM. G. LOOMIS
State Director of
Vocational Education

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SECTION I

INTRODUCTION

Purpose

This Guide is intended as a flexible instrument for use in the expansion and improvement of occupational education in Oregon. It provides guidelines which may be used in structuring total programs or modifying existing programs. In many instances, however, the guidelines may serve best simply as suggestions for and stimulants to program development and improvement at local or area levels.

Some parts of the Guide suggest only possible approaches to the improvement of programs and curriculums, rather than outlining procedures and content. In these portions, for example, articulation of secondary and post-high school programs and integration of occupational and academic education, the Guide seeks to promote innovation and experimentation. Other parts of the Guide do outline suggested procedures and content; however, these are presented as much to demonstrate concept and method as to provide programs and curriculums for implementation as shown.

Overall, the Guide seeks to stimulate continuing effort to make occupational education an integral part of the total educational structure and a significant sector of learning for all students.

Basic Premises

A number of basic premises underlie the selection and development of materials included in this manual. They rise out of the contemporary background of rapid social and economic change, our existing social and institutional arrangements, and some of the urgent problems and issues that confront our society. These premises are:

(1) That we will continue to undergo rapid technological and social change--the same sort of change that has in recent decades literally given us a new environment to live in and cope with. Our compelling need is to prepare our youth and adults to use technological change to benefit each individual and strengthen the total society.

(2) That education is the most effective means we have for adjusting to a world of ever-increasing change. It is not the only one, of course, but it is the institution best-suited to prepare people to deal with a technological explosion already far advanced. Our system of public education is one of the few institutions we have which reaches virtually all our population. As a society we are generally aware of the role education must play. We are looking to it to solve, or at least play a major part in dealing with, many of our most pressing problems.

(3) That preparation for work is becoming increasingly recognized as a major objective of education. Until recently, the various goals of education have usually been stated in broad terms of individual fulfillment and social committment. The goal of preparing people for work was usually implied; but it was seldom made explicit. Now, however, the goal of occupational preparation has been recognized and explicitly stated. In the Department of Health, Education, and Welfare's Guidelines for Program and Financial Development, the stated objectives clearly assign education a major role in achieving national manpower policy. The Guidelines state:

> ". . . Every individual should receive sufficient vocational or occupational education, training, or re-training to provide him with the abilities, skills, knowledge, and understanding for entry in the world of work, and should have the further opportunity to receive adult or continuing vocational and occupational education, training, or re-training."

The direct relationship of education and training to the world of work is thoroughly documented. Moreover, work remains the central means by which the individual in our complex society achieves and maintains his identity.

(4) That occupational education must be made an integral part of the total education. Academic and vocational education have been viewed as two things apart. In the modern world they cannot be. Meaningful involvement in our society is so related to possession of salable skills that occupational preparation for all is becoming a fundamental necessity for the general welfare. We must find the ways to eliminate the artificial division of academic and occupational education. As Marvin J. Feldman of the Ford Foundation has put it:

> ". . . [Today's students] look to the schools to supply them with the kind of education that will enable them to participate in and contribute to our work-directed society. Their motivation to learn depends heavily on convincing and continuing evidence that this is the kind of education they are receiving . . . .
>
> "If we are to meet our educational responsibilities to space-age youth, we can no longer tolerate an educational system that in large part ignores the world of work; where occupational studies are considered inferior to general studies; and where youngsters in the vocational track do not receive the academic training necessary for entry into college and those in college-preparatory programs are denied a vocational experience which relates their learning to reality." *

(5) That we must provide more clearcut ways for young people to move from childhood through adolescence to contributing roles as adults in our society. This is a task for all segments of the community, but education is uniquely situated to play a central role in achieving the goal. Our society has long-since departed from the family-centered economy in which children had a set of duties and responsibilities which were direct training for adult roles. And,

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*From "Making Education Relevant," an adaptation of a paper prepared for the Governor's Conference on Education, State of New Jersey, April 2, 1966.

it is extremely important to note, we have developed no usable substitutes that serve to link modern youth with the adult world. The adolescent does not fit, in any vital way, in the modern social order. Education must find ways to relate youngsters to the adult world of work, responsibility, and personal usefulness. The loss of significant work experience and responsibility must be replaced by some combination of education, information, and related work experience as a part of the total education structure. This does not apply only to the student in an occupational program, but to all students in our school system.

(6) That effective occupational education must provide intensive guidance and counseling. A large part of relating people to the world of work must come from comprehensive guidance programs. Sound occupational choice, planning, and preparation will be directly proportional to the quality of guidance, orientation, and information supplied. It is a complicated matter for the individual to find a productive role in today's world; and, with change so prevalent, it is difficult to maintain continuity in experience and identification. We know that today's young person may expect to change jobs five or more times in his working life. Moreover, even within an occupation, change is more and more a major characteristic. Finding and maintaining a productive, satisfying role requires directed effort and clarity in identification of individual interests, skills, and knowledge. To attain the direction and clarity required, guidance and counseling services must become vastly more knowledgeable of and oriented to the world of work in all its complexity.

(7) That the provision of occupational education is the responsibility of all segments of the educational system. The question of where or at which level occupational education should be offered shows astonishing persistence. We would do as well to ask where or at which levels we should teach English or mathematics. The answer must be at all levels as they relate to the development of the individual--and not simply to the organization of a system. We

must explore whatever changes are necessary to integrate occupational education goals into the public school system at all levels--elementary, secondary, and post-secondary.

At the junior high school level or below, well before most students leave school, occupational exploratory programs should be established. Clearly there is need for a bridge from junior high to senior high vocational patterns, and clearly young people of the ages involved will be benefited by education that motivates them to learn about the world of work and provides them with occupational information. Since over one-half of all students presently do not enter any formal post-secondary education, preparation for entry-level employment must be provided in the secondary schools. However, with technology continuously extending the range of required work skills and knowledge, secondary programs must be designed to maintain the opportunity for students to enter more advanced and specialized education in post-secondary settings.

(8) That occupational education must be attuned to the realities and requirements of the world of work. Adequate educational preparation for work more and more has become the crucial factor in the movement of young people into responsible adult roles in our society. In a sense, it is no longer realistic to speak of a right to work as a right with which our society endows a person. Increasingly, it is becoming clear that a person must actually earn the right to work. He must earn it through education and effort. More and more, the right to work is made valid only through exercise of the right to education. Clearly, it must follow that it is incumbent upon the education system to provide education that is attuned to the world of work. To assure the provision of education that is economically and socially relevant, we must establish and maintain functional, mutually supportive relationships with other sectors of the community. We must develop programs and content in close liaison with agriculture, labor, business, industry, and government. No one agency or institution in this complex, interrelated society of ours can solve its problems or fulfill its responsibilities alone.

(9) That investment in effective occupational education returns high dividends to society. The achievements of our incentive-based economy have provided an unprecedented productivity and unparalleled diversity and challenge. Economists have convincingly demonstrated that the total productivity of a country--particularly a highly industrialized one--bears a close relationship to the educational achievement of its citizens. Increased productivity depends upon improved technology; improved technology depends upon better education; and the effective application of advanced technology requires a trained and highly adaptable labor force. The real wealth of this country increasingly has moved from land and capital investment into our human resources. From a completely practical point of view, the most remunerative investment we can make in our highly-technological, industrialized economy is in the development of these human resources. Effective occupational education is essential to meet the needs of a dynamic economy.

GUIDE OBJECTIVES

This Guide is intended to suggest approaches to the long-run attainment of four basic objectives. They are to provide:

(1) Meaninfgul occupational education, available to all students, throughout the junior high and high school structure.

(2) Opportunities for students to achieve entry level employment competency while in the secondary education complex.

(3) Occupational education which is appropriate to the objectives of students who will continue their education beyond the high school.

(4) Occupational education at the secondary level which is neither narrowly restrictive nor excessively specialized.

These objectives combine to produce essentially four directions or emphases that are either new departures or reorientations of previous guides and programs:

(1) Utilization, where appropriate, of curriculums for grades eleven and twelve which are centered upon the concept of occupational clusters, and which have been selected through analysis of occupational needs in Oregon.

(2) Attainment of *continuous articulation* of occupational education offerings from grade seven through grade twelve and into post-high school education and training.

(3) Vastly increased *integration* of occupational education, guidance and counseling, and the traditional "academic" desciplines.

(4) Application of the concepts of "*cooperative functioning* of educational agencies" and "*area facilities*" where factors of student population and resource limitations indicate the need for them.

SECTION II

PLANNING OCCUPATIONAL PREPARATORY PROGRAMS

The material outlined in this section is based upon the Oregon State Plan for Vocational Education. Only those portions of the plan which are basic to program planning have been included. Administrators and others involved in developing, implementing, or operating occupational preparatory programs will find it essential that they have access to and familiarity with the total State Plan.

General Criteria

In order to qualify for approval under the provisions of the Oregon State Plan for Vocational Education, occupational preparatory programs must satisfy the following criteria:

1. Objectives of the Instruction

   The occupational preparatory program must:

   a. be designed to prepare individuals for employment in an occupation or group of closely related occupations.

   b. be directed toward recognized occupations which require an appreciable amount of specialized training, but not toward those occupations generally considered as professional or requiring a baccalaureate or higher degree.

   c. provide students completing the program with vocational skills and knowledges which particularly qualify them for entry-level employment or for placement in post-high school occupational education.

2. Utilization of Occupational Advisory Committees

   The occupational preparatory program must be developed and conducted with the advice of employers and other persons having current and substantial knowledge of the occupations for which students are to be prepared. Each curriculum pattern must be served by a separate committee or sub-committee composed of representatives from:

   a. employers and/or employer associations and management personnel.
   b. labor organizations, where appropriate.
   c. experienced, qualified workers in the occupations concerned.
   d. existing post-secondary programs involving the same or similar occupational education areas.

3. Identification of Employment Opportunities

   Numerically significant opportunities for employment within the occupations associated with each preparatory program must be identified. Employment opportunities may be identified through:

   a. local surveys accomplished by the educational agency concerned.
   b. area skill surveys accomplished by the Employment Service.
   c. specific statements of need submitted by employers.
   d. other reliable data concerning regional, state, and national employment opportunities.

4. Determination of Instructional Content

   Instructional content must:

   a. be based upon the skills and knowledges required by individuals to work effectively in the occupation or cluster of occupations associated with the instructional program.
   b. reflect consideration of the instructional contexts (field, shop, laboratory, and cooperative or other work experience, as well as classroom instruction) which will provide the most effective learning to students involved.
   c. be adapted to the needs of those engaged in or preparing to engage in the occupations.
   d. be developed in consultation with an occupational advisory committee.

5. Determination of Program Duration

   Duration of occupational preparatory programs must:

   a. be based upon the amount and complexity of the skills and knowledges required to qualify individuals for entry employment in the occupations associated with the instructional program.
   b. reflect consideration of skill and knowledge requirements for effective articulation with post-secondary occupational education programs.

c. take into account requirements in similar programs with records of successful operation.

d. be determined either in consultation with an occupational advisory committee or through analyses of the occupations involved to determine the levels of ability and knowledge needed by the student to qualify for entry.

6. Selection of Students

Students admitted to occupational preparatory programs:

a. must be pursuing occupational objectives compatible with those of the curriculum pattern selected.

b. are to meet selection standards appropriate to the curriculum pattern they have selected.

7. Qualifications of Supervisory and Instructional Personnel

Occupational preparatory programs are to be supervised and conducted by qualified personnel. Administrators, supervisors, instructors, and coordinators must meet appropriate certification or other requirements established by the State Board of Education. This includes occupational experience (field, shop, laboratory, and cooperative work), as well as the regular classroom portions of the programs.

8. Provision of Adequate Facilities and Equipment

Facilities and equipment used in operating an occupational preparatory program must be adequate in both quantity and quality to serve adequately the objectives of the program design. To help assure this adequacy, facilities and equipment must:

a. be designed or selected in accordance with the instructional objectives they are intended to achieve.

b. meet with the approval of, or be designed or selected in consultation with, the occupational advisory committee.

c. meet generally accepted or specified standards for operational safety.

9. Provision of Occupational Guidance and Placement

Occupational education programs are to be coordinated with guidance and counseling services which:

a. provide students with information and assistance in program planning, selection, and enrollment.

b. render assistance to students who are pursuing a vocational program plan.

c. provide occupational placement services to students completing preparatory programs.

10. Program Evaluation

    Evaluation of the effectiveness of occupational preparatory programs must include at least:

    a. a follow-up of all students completing, or terminating without completing, the program. The follow-up is to obtain, at a minimum, information concerning the employment status of the individual.

    b. continued evaluation by the occupational advisory committee.

    c. periodic evaluation by professional vocational education personnel having special competencies in the occupational programs concerned.

Steps in Planning a Program

1. Identification of employment opportunities.
2. Determination of instructional objectives.
3. Organization of the occupational advisory committee.
4. Development of instructional content.
5. Determination of program duration.
6. Establishment of criteria and procedures for admission of students.
7. Determination of facilities and equipment required, and arrangements for acquisition.
8. Arrangements for staffing with qualified personnel.
9. Provisions for occupational guidance and placement.
10. Establishment of evaluation procedures.

SECTION III

THE OCCUPATIONAL CLUSTER APPROACH TO CURRICULUM DEVELOPMENT

As stated in Section I, utilization of the cluster concept as one approach to program development is a major orientation of this Guide. Although it is likely that general agreement exists concerning the meaning and application of the concept, it may be well to describe it and the way in which it has been used in the development of this Guide.

The Cluster Concept

The occupational cluster concept simply holds that occupations may be classified into logically related groups on the basis of authentic identical or similar elements or characteristics. If the concept is to be utilized in planning occupational education, the identical or similar elements that may link occupations into clusters-of-occupations must be located among the manifold skills and knowledges necessary for workers to perform effectively in the multitude of jobs found in our economy. Hence, as it is used in this Guide, a "cluster of occupations" is composed of recognized occupations which are logically related because they include identical or similar teachable skill and knowledge requirements.

Obviously, the implication is that occupational education centered upon the knowledge and skills common to the occupations comprising a "cluster" should prepare students for entry into an "area" or "family" of occupations rather than any specific one. In an economy increasingly characterized by rapid technological change in work skill and knowledge requirements, preparation for employment in a properly identified occupational cluster should be advantageous to most high school students. It should avoid premature commitment of the student to a narrow work specialty, and, at the same time, provide enough breadth in initial preparation to enable the student to cope more effectively with occupational and employment changes. In addition, such education should qualify students for subsequent enrollment in more concentrated and specialized education.

Educational programs based upon the cluster concept should, then, develop in the student entry-level competencies in a related variety of jobs and provide flexibility in terms of occupational, educational, and geographic mobility.

The Clustering Problem

The cluster concept is not new (Franklin Keller, writing in the NSSE Yearbook in 1943, referred to the need for developing vocational education programs based on families of occupations rather than specific ones), neither is it particularly complicated. Perhaps because the concept is relatively familiar and uncomplicated, the task of defining occupational clusters appears, on the surface at least, deceptively simple. It is in fact enormously difficult.

The spectrum of occupations and variations of occupations which makes up the occupational structure of the United States and of Oregon is so broad, complex, and subtle that it presently defies analysis and classification through purely objective, mathematical, or machine systems. Despite a number of intensive efforts, no simple, objective, or machine formula has yet been devised to solve the problem of clustering occupations for the development of occupational education programs.*

This is not to suggest that the problem is insurmountable. It may well be that some sort of "breakthrough" is imminent here. However, for the time being at least, if the advantages of the cluster approach are to be exploited, it becomes necessary to defer the comforts of scientific objectivity and proceed uncertainly with the task at hand. This is what this Guide seeks to promote: a cooperative effort to "get on with the job," utilizing the best available information, judgment, and expertise.

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*The states of Colorado, Maryland, Nebraska, Oregon, and Washington are or have been involved in research directed to this end.

Development of the Guide Clusters

In order to develop the clusters included in the Guide, it was first necessary to devise a procedure which was at least workable within the limitations of technique and information currently available. The procedure followed consisted of two rather involved steps:

(1) A committee of three members appointed from the staff of the Division of Community Colleges and Vocational Education was assigned the tasks of defining the characteristics and minimal requirements for designation of a cluster and making a tentative identification of the clusters to be included. Working from generally accepted occupational data and applying the best available information, e.g., The Dictionary of Occupational Titles and occupational information developed by the State Department of Employment, the committee identified twelve tentative clusters.*

(2) The tentative clusters were then submitted to supervisors within the Division of Community Colleges and Vocational Education and other consultants for further analysis and recommendations. Neither the procedures used nor the clusters developed received unanimous approval; there was, however, consensus that the clusters identified should be accepted and incorporated in the Guide.

The clusters identified and the number of jobs involved in each were as follows:

	1966 Employment** in Oregon	Oregon Replacement and Expansion Needs to 1970**
1. Mechanical (and Repair) Occupations	62,848	8,895
2. General Clerical Occupations	58,329	11,404
3. Basic Marketing Occupations	47,153	12,634

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* Minimum numerical requirements adopted by the committee for inclusion of a tentative cluster were present employment in Oregon of 10,000 workers and a forecast need for 2,000 workers by 1970.

**Statistical data, other than in Agricultural Occupations, were developed from State of Oregon Department of Employment study "Technological Change and its Impact on the Oregon Labor Force," November, 1966.

		1966 Employment in in Oregon (con't)	Oregon Replacement and Expansion Needs to 1970 (con't)
4.	Agricultural Occupations*	47,824	8,143
5.	Food Service Occupations	34,636	6,187
6.	Construction Occupations	23,658	2,826
7.	Wood Products Occupations	21,924	2,218
8.	Secretarial Occupations	21,282	4,891
9.	Metal Working Occupations	18,708	3,643
10.	Bookkeeping and Accounting	18,040	3,022
11.	Health Occupations	14,554	3,587
12.	Electrical Occupations	12,106	1,756

Development of Cluster Curriculum Content

Following identification of the occupational clusters to be included in the Guide, the immediate problem became development of illustrative curriculum content for each. This task involved, as did the cluster identification, analysis of occupations to determine required skills and knowledge. In this stage, however, the occupations concentrated upon were the key ones selected for inclusion in each of the clusters.

The procedures followed in content development were:

(1) Determination of the skills and knowledges required in the key occupations in each cluster. These were developed for the most part from analyses made by specialists from the Oregon State Department of Employment. The following, excerpted from materials developed concerning Auto Mechanics (a key occupation in the Mechanical Occupations cluster), is an example of content development at this point in the process:

---

* Based primarily upon replacement needs in production agriculture. The employment needs for off-farm agriculture occupations are incomplete. Data furnished by Department of Employment.

Auto Mechanic

A Duties Performed	B Knowledge or Skills Required
1. Repairs automobiles and light trucks.	1. Must have thorough knowledge of electrical and mechanical principles as applied to combustion engines and automobiles.
2. Disassembles and overhauls engines, transmissions, clutches, differentials and other assemblies.	2. Must be able to interpret technical diagrams. and service bulletins.
3. Replaces worn or broken parts, grinds valves, relines and adjusts brakes, and aligns wheels.	3. Must know how to use testing machines and instruments found in a garage.
4. Uses mechanical hand tools, power tools, chain hoists and testing machines.	4. Must be familiar with all types of mechanical hand and power tools.
5. Repairs generators and starters.	5. Must have good vision, hearing and average finger and manual dexterity.

(2) Identification of teachable elements inherent in the skills and knowledges determined through analysis of the key occupations. The items listed below, again taken from work done with the Mechanical Occupations cluster, are examples of teachable elements identified for the key occupation, Auto Mechanics.

1. Safety principles
2. Properties of metal
3. Shop mathematics
4. Basic electricity
5. Mechanical principles
6. Use of hand tools (mech)
7. Use of metal bench equipment
8. Use of electrical testing equipment
9. Blueprint reading
10. Maintenance, automotive equipment
11. Repair, automotive equipment
12. Workmanship attitudes (enthusiasm, initiative, drive, etc.)

(3) Organization of the identified elements into proposed courses in sample curriculum patterns. This phase of the development was accomplished by small work-groups composed primarily of state staff personnel and other vocational educators. In addition, reactions and recommendations concerning the proposed courses and curriculums were obtained from industrial and labor representatives, as well as from instructors in related subject areas.

At this point it was necessary to provide the working committees with some frame of reference with respect to time or units of instruction to be considered in outlining a sample curriculum. To give coherence to the overall structure, it was also necessary to make some assumptions regarding enrollment standards and numbers of cluster curriculums to be considered in planning programs. The assumptions made and the factors shaping the planning framework are described in Section IV.

The courses and curriculums developed in this phase of the project are outlined in Section V.

SECTION IV

SUGGESTED PATTERN OF OCCUPATIONAL EDUCATION FOR SECONDARY SCHOOLS

This section outlines a suggested pattern for a basic occupational education program in secondary schools and indicates the assumptions made and factors considered in its development. It is emphasized that these do not and were not intended to produce an all-encompassing, inflexible pattern to be followed in all cases and under all conditions. The patterns shown developed out of the assumptions made and factors included. They are intended only as guidelines to be considered in developing a comprehensive occupational education program.

General Assumptions

1. That the occupational cluster approach to program and curriculum development has been adopted for implementation in grades eleven and twelve.
2. That a program of occupational exploration has been devised for implementation in grades seven through ten (including a formal offering in occupational information and exploration at the ninth or tenth grade level).
3. That the overall program includes adequate guidance and counseling services throughout the grades involved.
4. That introductory courses related to the cluster patterns are available to students who elect them at the ninth and tenth grade levels (however, students not electing these would still qualify for entry into the cluster-based curriculums).

Specific Assumptions

1. Each occupational curriculum requires a minimum enrollment of 15 in order to be efficient and economical.
2. Approximately fifty percent of the total enrollment of high schools will be in the occupational education program.

3. A comprehensive program of occupational education will include all twelve cluster-based curriculum patterns.
4. A minimum program of occupational education will consist of at least eight of the clusters developed.
5. Most occupational education curriculums identified for the 11th and 12th grades require a minimum of ten class periods per week to provide the intensive and extensive instruction necessary for effective entry occupational performance. (This is in addition to the regular state and local educational requirements.)

Factors Shaping the Patterns

Charts I through III on pages 20 and 21 summarize the factors which were included in the development of the total program.

Chart I depicts an approach to integrating occupational education into a school pattern commonly found in the Oregon school structure.

Chart II indicates average state and district requirements for graduation. (In some cases, it may be that occupationally-oriented courses are or can be offered which will satisfy established district requirements; in others, established courses may be restructured to provide the needed occupational orientation.)

Chart III was developed to:

a. show the sizes of the high schools in Oregon.
b. show the total enrollments of various size groupings of high schools.
c. indicate sizes of high schools that might logically be grouped together for the development of education programs.

It should be noted that groups I and II include one-third of the high schools in Oregon (70) with 75 percent of the total enrollment, while group IV with 87 high schools includes only 6 percent of the enrollment.

Suggested Occupational Education Patterns

Charts IV and V on pages 24 and 25 show suggested occupational educational programs for high schools in size groups I and II. The programs illustrated are based on clusters of occupations as explained in Section III, and the number of programs in each pattern was determined by

CHART I

ONE APPROACH TO SCHEDULING OCCUPATIONAL EDUCATION INTO A SCHOOL PATTERN

7th and 8th Grades	9th Grade	10th Grade	11th Grade	12th Grade
1. Social Studies	1. English I	1. English II	1. English III	1. English IV
2. Language Arts	2. Math I	2. Math II or Algebra	2. U. S. History	2. Modern Problems
3. Math	3. Health and Physical Education	3. Health and Physical Education	3. Physical Education	▥ 3.
4. Health and Physical Education	4. Science	4. Biology	▥ 4.	▥ 4.
5. Science, General Music	▥ 5.	▥ 5.	▤ 5. Occupational Courses	▤ 5. Occupational Courses
6. Arts and Crafts, Industrial Arts, Homemaking	▤ 6. Self Understanding Through Occupational Exploration	▤ 6. Introduction to an Occupation	▤ 6. Occupational Courses	▤ 6. Occupational Courses
▥ 7.				

☐ Required

▥ Elective

▤ Possible occupational curriculum pattern (average)

* See Section VI for course description

CHART II

SEMESTER HOUR REQUIREMENTS FOR HIGH SCHOOL GRADUATION

Subject	State	District (average)
English	30	40
Social Studies	20	20
Health and Physical Education	20	30
Science	10	20
Mathematics	10	20
Electives	100	90
Total 4 year	190	220
Total 3 year	140	170

CHART III

HIGH SCHOOLS GROUPED ACCORDING TO 12TH GRADE ENROLLMENT AS OF SEPTEMBER 30, 1965

Enrollment Group		12th Grade Enrollment	% of Total Students	Number of Schools	Total Enrollment
12th Grade	School Total*				
I. 300-700	(1000-3000)	16,588	53.20	36	61,400
II. 140-299	(600-999)	7,014	22.50	34	26,487
III. 50-139	(200-599)	5,568	17.85	62	24,135
IV. 1-49	(20-199)	2,012	6.45	87	9,609
TOTAL		31,182	100.00	219	121,631

* Total school enrollment group figures are only approximate due to inclusion of 3 and 4-year high schools.

applying the assumptions outlined in the first part of this section. For example, it was assumed, for purposes of illustration, that each of the twelve occupational education programs requires at least 15 seniors to be an economical unit. This means that a full program would require a minimum of 180 students. Assuming that this is 50 percent of the students, a total enrollment of 360 seniors would be needed in the optimum pattern. The minimum pattern was developed on the same basis.

Actually the enrollments required for groups I and II are bare minimums, since many of these programs would enroll more than the minimum 15 students for each class.

No attempt is made here to illustrate occupational education programs for groups III and IV. However, it is assumed that these smaller size high schools could either offer a part of the minimum program or cooperatively develop a larger program. In many cases, even the larger high schools may find it advantageous to develop cooperative programs.

Cooperative Functioning and Area Facilities

Except in the large metropolitan school, the development and operation of adequate programs of vocational education, even in limited numbers of occupational areas, may be difficult to finance and often to justify. For the small school, the initial expense involved in providing adequate facilities and equipment may well be prohibitive; and sustained operation may be difficult to justify in terms of enrollments.

These factors in combination with the increasing emphasis upon and need for more and better vocational education have led to various innovations and explorations by educators seeking ways to provide quality vocational education for the many students who desire it and would profit from it.

One of the more logical ways to approach the problem, obviously, is for individual districts to combine their resources and student potential with those of other districts. Such cooperative action brings pressure to bear on both aspects of the problem.

A summary report* of a series of meetings of key labor, business, industry and education officials in Oregon states the following conclusion:

> "High schools of less than 500 enrollment do not find it economically feasible to offer an adequate vocational education program. There should be a concerted effort on the part of these schools to establish cooperatively an area vocational program to serve all of the schools involved."

Several ways have been suggested for high schools, small and large, to achieve cooperative functioning in the development and operation of occupational education programs:

1. To develop a separate area facility jointly administered by the several high schools.
2. To develop an area facility administered by one district with other districts contracting.
3. To establish cooperation through a community college in the area involved.
4. To allocate selected occupational programs to the various high schools within an area and arrange for students from all high schools in the area to receive their occupational instruction in the vocational program at the appropriate high school. Under this arrangement, students would receive their general education in their home school.

In Oregon, the "area facility" approach seems to be meeting with the most favorable response. Areas developing definite plans of this sort are Coos Bay, Milwaukie, Portland, Lincoln County, and Lane County (Bethel, Crow-Applegate, Fern Ridge, and Junction City Districts). Other areas, such as Jackson, Clatsop and Tillamook Counties, are seriously considering the "area facility" approach.

The national picture appears to be similar. The U. S. Office of Education reported in 1964 that over 400 area vocational technical schools were in operation and 132 more under construction.

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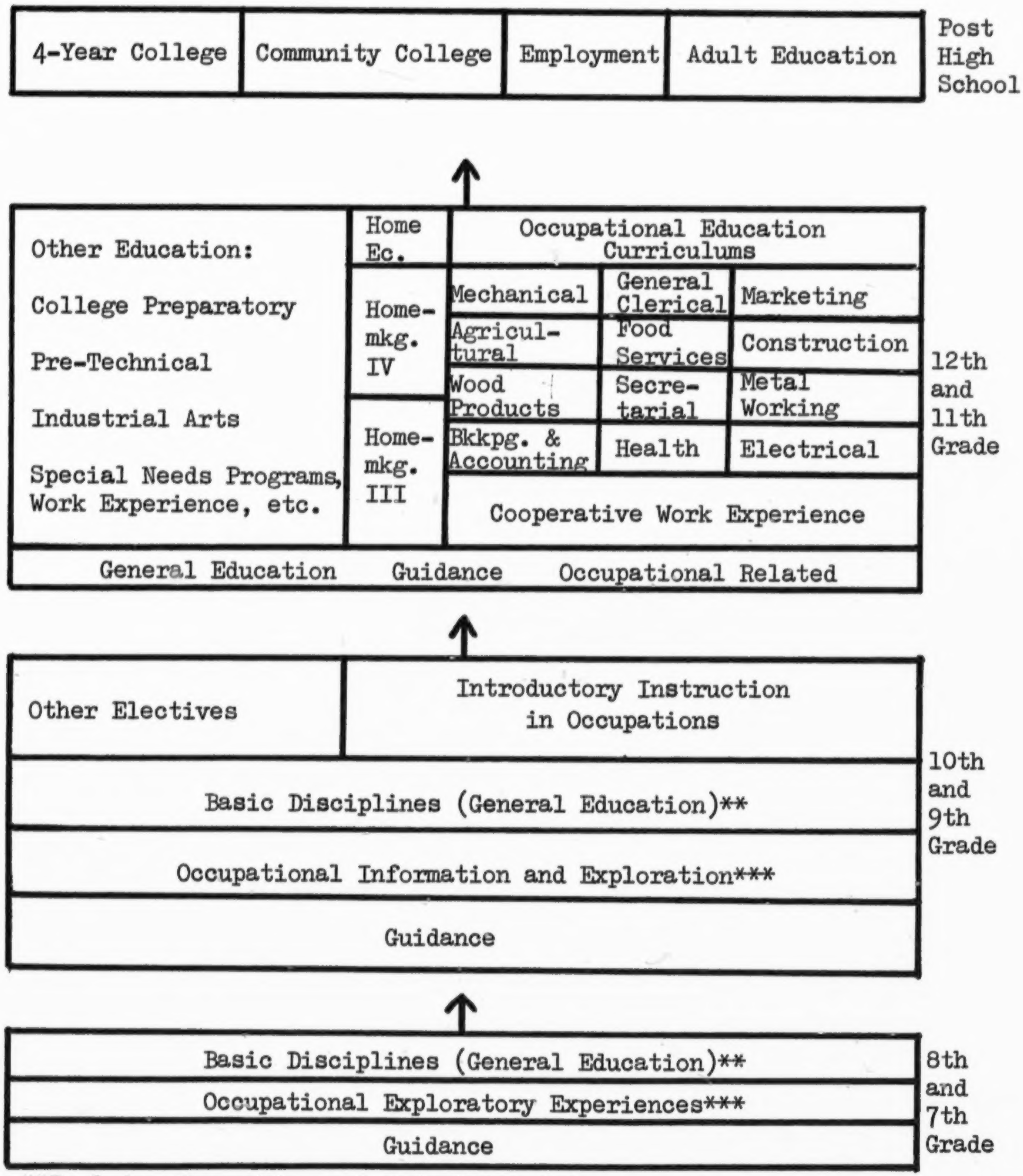
*State Department of Education, "High School Vocational Education--What Type Makes Sense?" A Group Summary Report, 1967.

CHART IV

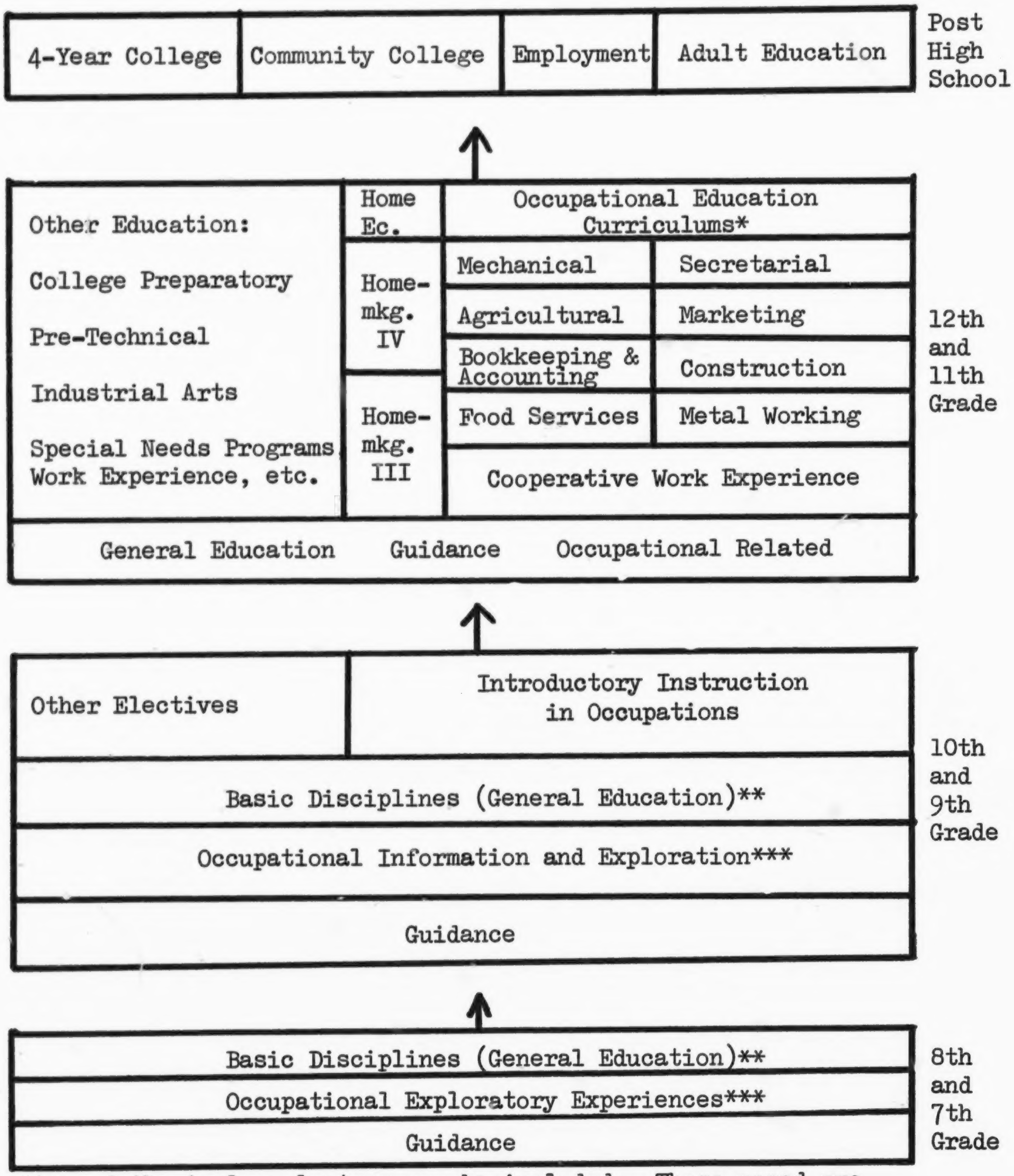
SCHEMATIC OF
SUGGESTED OCCUPATIONAL EDUCATION PROGRAM
(Optimum Pattern for Group I)


4-Year College
Community College
Employment
Adult Education
Post High School
Other Education:
College Preparatory
Pre-Technical
Industrial Arts
Special Needs Programs, Work Experience, etc.
Home Ec.
Home-mkg. IV
Home-mkg. III
Occupational Education Curriculums
Mechanical
General Clerical
Marketing
Agricul-tural
Food Services
Construction
Wood Products
Secre-tarial
Metal Working
Bkkpg. & Accounting
Health
Electrical
Cooperative Work Experience
General Education
Guidance
Occupational Related
12th and 11th Grade
Other Electives
Introductory Instruction in Occupations
Basic Disciplines (General Education)**
Occupational Information and Exploration***
Guidance
10th and 9th Grade
Basic Disciplines (General Education)**
Occupational Exploratory Experiences***
Guidance
8th and 7th Grade

**Includes Homemaking and Industrial Arts.
***Relates to Section VII, pages 72-82.

CHART V

SCHEMATIC OF
SUGGESTED OCCUPATIONAL EDUCATION PROGRAM
(Minimum Pattern for Group II)


4-Year College
Community College
Employment
Adult Education
Post High School
Other Education:
College Preparatory
Pre-Technical
Industrial Arts
Special Needs Programs
Work Experience, etc.
Home Ec.
Home-mkg. IV
Home-mkg. III
Occupational Education Curriculums*
Mechanical
Secretarial
Agricultural
Marketing
Bookkeeping & Accounting
Construction
Food Services
Metal Working
Cooperative Work Experience
General Education
Guidance
Occupational Related
12th and 11th Grade
Other Electives
Introductory Instruction in Occupations
Basic Disciplines (General Education)**
Occupational Information and Exploration***
Guidance
10th and 9th Grade
Basic Disciplines (General Education)**
Occupational Exploratory Experiences***
Guidance
8th and 7th Grade

*Any of the twelve clusters may be included. Those named are illustrative only.

**Includes Homemaking and Industrial Arts.

***Relates to Section VII, pages 72-82.

SECTION V

SUGGESTED OCCUPATIONAL CURRICULUMS FOR SECONDARY SCHOOLS
(Grades 11 and 12)

Purpose and General Objectives

The purpose of this section is to indicate briefly what a total occupational education program for grades eleven and twelve may look like. It is designed to show one conception of one approach to organization, content, scope, and sequence of cluster-based occupational curriculums.

Following the listing of objectives common to all curriculums, each of the occupational curriculums is outlined as follows:

1. The occupational curriculum (from occupational clusters), page 14.
2. The key occupations selected from each cluster.
3. Objectives to illustrate major areas of development.
4. Course sequence and descriptions to give an idea of the content. (An exception to this pattern is the inclusion of course descriptions for the General Clerical, Secretarial, and Bookkeeping and Accounting Curriculums under one heading following the Bookkeeping and Accounting sequence.)

With the exception of office occupations, the sequences list recommended two hour courses which would be required in the curriculums and one hour related which might be selected from a number of electives. The related courses shown are intended as examples. The office occupations sequences are, for the most part, made up of courses that would be required.

MAJOR OBJECTIVE

The purpose of the occupational education curriculums is to develop skills, knowledges, attitudes, habits and understanding that will prepare students for entry employment or continued education upon completion of high school.

GENERAL OBJECTIVES
(Apply to all Curriculums)

Help students develop:

- appreciation of the scope and importance of the industry and occupations involved,
- skills and knowledge required to work successfully in the occupation,
- understanding of the employment opportunities available and the preparation needed to enter and make progress in the occupation,
- effective work habits and attitudes and understanding of employer-employee and customer relationships,
- ability to manage time, energy and money,
- understanding of labor laws in the state,
- ability to carry out proper procedures in applying for a job,
- effective health and safety practices,
- ability to use communication skills related to the occupational area involved,
- personal and social skills essential for the successful worker,
- abilities needed to exercise and follow effective leadership in fulfilling occupational, social and civic responsibilities.

MECHANICAL CURRICULUM

Key Mechanical Occupations

D.O.T.	Occupation	1966 Employment	Needed to 1970
5-83.931	Diesel Mechanics	595	217
5-80	Mechanics, Airplane	421	183
5-81.510	Mechanics, Automotive, Auto Body	855	262
5-81.010	Mechanics, Automobile, Gen. Duty	4,246	882
5-81.110,430 and 4-81.610, 5-81.920,5-89.411	Mechanics, Automobile, Tuneup and Specialty	1,023	197
5-81.03	Mechanics, Bus & Truck	1,657	343
5-81.040	Mechanics, Heavy Equipment	1,407	229
5-83.621	Mechanics, Factory or Mill Maint.	1,208	187
5-83.641	Mechanics, Machinery & Equipment Maintenance	2,701	406
5-78-100	Millwrights	2,031	207
7-02, 7-05	Transportation Equipment Mfg.	1,048	215
7-60.500	Service Station Attendant	5,944	702
7-35, 7-49	Transportation Occupations, other than listed	8,021	865

Mechanical Related Occupations

D.O.T.	Occupation	1966 Employment	Needed to 1970
5-73	Cranemen, Derrickmen and Hoist men, except Logging Engineer	1,694	268
5-36	Drivers, Passenger Vehicles	3,115	448
5-83.100, 149	Office Machine Servicemen	401	116
6-33, 6-34	Woodworking Machine Operators	2,619	310
7-36.220, 250,	Truck Driver, Dump, Heavy, Log	14,481	1,936
	Total for Cluster (not for key occupations listed)	62,848	8,895

OBJECTIVES

Help students develop:

- an understanding of the basic principles of mechanics, electricity and power as they relate to sources of mechanical power (e.g., internal combustion engines), power transfer systems, and controlling systems,
- basic skills in maintaining mechanical equipment and machines, and in troubleshooting and correcting malfunctions,

- an understanding of the characteristics and applications of materials commonly used in mechanical equipment and machines,
- an awareness of current technological developments and advances within the mechanical industry.

COURSE SEQUENCE

11th GRADE

First Semester	Second Semester
1 hr Allied Supporting Course* 2 hrs - Mechanical Practices and Machines	1 hr Allied Supporting Course* 2 hrs - Power Transmission and Mechanic

12th GRADE

First Semester	Second Semester
1 hr Allied Supporting Course* 2 hrs Hydraulics and Pnuematics	1 hr Allied Supporting Course* 2 hrs Power Systems

*Recommended Allied Supporting Courses

- Machine Tool Fundamentals I
- Machine Tool Fundamentals II
- Welding Fundamentals
- Mechanical Drawing
- Machine Drawing
- Basic Electricity
- Blueprint Reading & Sketching
- Industrial Science
- Industrial & Business Mathematics
- Co-op Related Instruction

COURSE DESCRIPTIONS

OCCUPATIONAL SPECIALTY COURSES

Hydraulics and Pneumatics: Fundamental principles and applications of hydraulic and pneumatic systems. Includes study of the basic hydraulic and pneumatic system components and their relationship to the complete circuit or system. Students will learn the use, selection, installation, and maintenance of hydraulic and pneumatic components and systems. Includes laboratory experiences stressing application of theoretical principles.

Mechanical Practices and Machines: Care and use of hand and portable power tools and machines used in mechanical occupations. Includes utilization of precision measurement and layout tools, assembly and adjustment tools and machines (portable and floor standing), and mechanical assembly and fastening methods and devices. Laboratory experiences are emphasized.

Power Systems: Fundamental principles of operation, care and maintenance of common power sources encountered by mechanics. Includes study of the theory and application of internal combustion engines and electrical starting and generating motors. Provides appropriate laboratory experiences designed to facilitate learning.

Power Transmission and Mechanics: Means and methods of transfer of power from point of generation to the place where work is done. Covers common methods of power transfer used in industry. Content is presented in terms of both theory and practical application. Laboratory experiences include application of belt and chain drives, shafting and seals, bearings, couplings and clutches, and gearing and speed reduction.

RECOMMENDED ALLIED SUPPORTING COURSES

Machine Tool Fundamentals I: Deals with the fundamental machine tools used in industry. Laboratory work includes theory and application of machine tools to forming and shaping operations used by industry in fabricating machined parts and assembly components. Students will learn basic operation of the drill press, lathe, shaper, and grinder.

Machine Tool Fundamentals II: A continuation of Machine Tool Fundamentals I designed to cover more advanced lathe techniques. Includes fundamental operations performed on horizontal and vertical milling machines. Additional grinding techniques and practices are introduced and practiced. Laboratory experiences that apply machine tool theory are included.

Welding Fundamentals: Fundamentals of fabrication techniques in today's industry. Includes ferrous and non-ferrous welding, adhesives, metal fasteners, and metal forming and shaping. Emphasis is on student learning through practical application.

Mechanical Drafting I: An introduction to drafting principles, methods, and techniques used in modern industry. Includes instruction and practice in principles of visualization, geometric construction, dimensioning and use of working drawings.

Mechanical Drafting II: A continuation of Mechanical Drafting I with emphasis on technical sketching and shape description, multi-view projection, shop processes, tolerancing, and intersections and developments. Serves as an introduction to more advanced graphic representation such as engineering graphics, structural drafting and topographic drawing.

Blueprint Reading and Sketching: Reading and interpreting shop and working drawings used in industry. Practice in the communication of ideas through the use of freehand shop sketches. Emphasizes visualization, symbolism and sectioning.

Basic Electricity: A basic course in electrical fundamentals covering magnetism and electricity. Laboratory time is provided for demonstration and experiments to help clarify principles and procedures. Emphasizes use and care of electrical machinery, field analysis of electrical equipment failure, and repair of electrical motors, switches, and transfer equipment.

Industrial Science: An introductory course in practical physics covering systems of measurement, properties of matter, mechanics and machines, and heat and temperature. Laboratory time allows for demonstrations and experiments by the student. Emphasizes the application of science to modern industrial equipment.

Industrial and Business Mathematics: A course designed to reinforce basic mathematics and make application of mathematical principles to situations encountered in business and industry. Includes review of arithmetic functions of fractions, decimals, ratio and proportion. Emphasizes use of basic algebraic, geometric, and trigonometic formulae to solve practical application problems.

Co-op Related Instruction: Related instruction for supervised, on-the-job training. Helps the student develop skills, knowledges, understandings, and work attitudes essential to success in his selected occupation or occupational cluster. Content is related to on-the-job experiences encountered by the student.

GENERAL CLERICAL CURRICULUM

KEY OCCUPATIONS

D.O.T. Number	Occupation	1966 Employment	Needed to 1970
1-48. all	Agents and Appraisers	1,461	397
1-06. all	Bank Tellers & other financial institution clerks	2,405	676
1-01.51-69	Cashiers	2,690	404
1-03. all	Checkers & Tallymen	4,518	1,004
1-12.01, 1-12.09	Clerks, Credit	925	201
1-17	Clerks, File	1,024	172
1-04	Clerks, General	4,195	951
1-05.01	Clerks, General Office	14,015	2,794
1-27. all	Clerks, Postal	2,316	367
1-18.41,1-18.49	Clerks, Receptionists and Information	2,242	480
1-34.all	Clerks, Shipping & Receiving	2,539	493
1-38.01,02,04,06	Clerks, Stock	2,243	380
1-18.80, 1-19.29	Clerks, General Industry, not elsewhere classified (office)	1,189	216
1-28. all	Mail Carriers	2,072	333
1-42.01, 1-42.05	Telephone Operator, Central Office	2,540	461
1-42.31,1-42.34	Telephone Operator,	1,132	180
	Total for Cluster (not for key occupations listed)	58,329	11,404

OBJECTIVES

Help students develop:

- ability to type at least 40 wpm,
- ability to manipulate the typewriter efficiently in preparing forms, such as invoices and bills of lading,
- ability to type in good form--letters, interoffice memos and other forms of communication,
- understanding of automatic and electronic data processing systems and ability to work with them,
- skill in the operation of office machines, such as the ten-key, full-key, rotary and other calculators, and adding-listing machines,
- ability to use modern systems of filing,

- ability to use the double-entry system of bookkeeping and record keeping,
- proper telephone use techniques,
- ability to solve mathematical problems such as percentages, interest, discounts and mathematical formulas,
- ability to handle money transactions and credit procedures.

COURSE SEQUENCE
(General Clerical Curriculum)

11th GRADE

First Semester	Second Semester
1 hr - Typing II 1 hr - Business Math 1 hr - Bookkeeping I	1 hr - Typing II 1 hr - Business English 1 hr - Bookkeeping I

12th GRADE

First Semester	Second Semester
1 hr - Business Machines and Introduction to Data Processing 2 hrs - Clerical Practice	1 hr - Business Law 2 hrs - Clerical Practice (including work experience)

SECRETARIAL CURRICULUM

KEY OCCUPATIONS

D.O.T. Number	Occupation	1966 Employment	Needed to 1970
1-33.01	Secretary	9,584	2,308
1-37.12, 1-37.18	Stenographer	4,949	1,103
1-37.32, 34	Typists and Clerk-Typists	6,272	1,394
	Total for Cluster (not for key occupations listed)	21,282	4,891

OBJECTIVES

Help students develop:

- awareness of the importance of secretarial and stenographic duties in business operations,
- ability to accept responsibility for office routines,
- ethical practices in handling confidential matters,
- ability to produce work of acceptable quantity and quality for initial employment in secretarial and stenographic fields,
- ability to do manuscript typewriting without guidance by references, manuals or books,
- knowledges and skills needed in accomplishing required typing and making multiple copies,
- ability to take shorthand at 80 wpm minimum,
- skill in using dictation, transcription, and other office machines,
- understanding of modern systems of filing,
- ability to plan and type tabulated information and letters in various styles--block, semiblock, full-blocked, indented, NOMA Simplified, and interoffice memorandums,
- understanding of automatic systems and processes of storing and retrieval of data,
- proper techniques in using the telephone.

COURSE SEQUENCE
(Secretarial Curriculum)

11th GRADE

First Semester	Second Semester
1 hr - Typing II 1 hr - Shorthand I 1 hr - Business Math	1 hr - Typing II 1 hr - Shorthand I 1 hr - Business Machines

12th GRADE

First Semester	Second Semester
1 hr - Shorthand II 1 hr - Business Law 1 hr - Business English	1 hr - Shorthand II 2 hrs - Secretarial Practice (Including work experience)

BOOKKEEPING AND ACCOUNTING CURRICULUM

KEY OCCUPATIONS

D.O.T. Number	Occupation	1966 Employment	Needed to 1970
1-01.01,02,03, 04,05,08	Bookkeepers	9,840	1,438
1-02 all	Bookkeepers, Machine	1,209	221
1-01.20, 38	Clerks, Bookkeeping	2,443	431
1-25.01, 1-25.17	Machine Operators, Computing	666	165
1-25.62	Machine Operators, Key Punch	1,135	308
1-25.64	Machine Operators, Tabulating	798	182
0-69.981,985,98	Programmers, Systems Analyst, Systems Engineer	407	110
	Total for Cluster (not for key occupations listed)	18,040	3,022

OBJECTIVES

Help students develop:

- understanding of the process and steps in the bookkeeping cycle,
- ability to classify accounts and record transactions,
- understanding of specific journals and their functions,
- traits of accuracy, neatness, orderliness, thoroughness and responsibility,
- ability to use bookkeeping and accounting terms,
- skill in using business forms, business procedures, and equipment used in the business-economic world,
- knowledge of negotiable instruments,
- understanding of ways transactions can be recorded other than by means of journals,
- ability to produce formal statements and supporting schedules,
- recognition of the importance of departmental records in a business, and of the procedures in setting up the records,
- ability to prepare tax records and reports.

COURSE SEQUENCE
(Bookkeeping and Accounting Curriculum)

11th GRADE

First Semester	Second Semester
1 hr - Bookkeeping I	1 hr - Bookkeeping I
1 hr - Business Math	1 hr - Business English
1 hr - Business Law	1 hr - Economics

12th GRADE

First Semester	Second Semester
1 hr - Bookkeeping II	1 hr - Bookkeeping II
1 hr - Business Machines and Data Processing	1 hr - Business Machines and Data Processing
1 hr - Business Organization and Management	1 hr - Clerical Practice

COURSE DESCRIPTIONS

Typewriting II: Improvement of techniques and development of speed in typewriting. Includes development of ability to type business letters properly, including forms and statements, and to manage problem situations.

Business Machines: Provides training on the various machines used in today's business office. Essential equipment includes the ten-key adding-listing machines, bookkeeping machines, printing and rotary calculators, and various types of duplicating equipment.

Bookkeeping I: Introduces the student to the importance and functions of systematic adequate records in modern-day business. Beginning with the financial statements of a business, the course develops a logical sequential cycle of bookkeeping procedures using the double-entry system.

Bookkeeping II: Continuation of Bookkeeping I with more advanced study of the bookkeeping cycle. The use of special journals is included. Fixed assets, disposing of fixed assets, bad debts and use of the cash register are among the functions and operations covered in this course.

Business Math: Includes solving problems dealing with fractions, decimals, cash records, markups and markdowns, payroll calculations, aliquot parts, percentages and simple interest. (Business math takes precedence over algebra and other forms of higher mathematics in the business curriculum).

Business Law: Emphasis is on the application of legal and ethical aspects of law and practice to business situations. Various forms of contracts and negotiable instruments are presented along with sales, bailments, partnerships, corporations, insurance and other legal matters pertaining to business.

Business English: Includes a complete review of grammar and is presented in direct application to business functions. Good sentence structure and logical arrangement of letters and other communications used in business comprise the core of this subject. Letter writing is emphasized both in class and out of class assignments. The many types of business letters--application, inquiry, sales, good will, and credit and collection provide the background for meaningful application of effective written communication. Spelling, punctuation and business vocabulary are given special attention.

Business Economics: Introduces the student to the important aspects of consumer economics as well as problems of business and industry. Problems of organization, finance, operation and management are studied, as well as matters of national concern, such as gross national product, supply and demand, earnings, savings, investment, and the role of government in economic affairs.

Data Processing: Introduces the student to modern methods of sorting, filing, and retrieving information through use of electronic and automatic equipment. Use of computers and methods of programming as applied to business problems are presented.

Shorthand I: This is a beginning course in which the student is introduced to shorthand symbols along with background theory. Early practice on correct forms and habits constitutes the first part of the course. Since this is a skill subject, plenty of practice will be of the most benefit for building up speed.

Shorthand II: Development of dictation speeds in keeping with the requirements of business. Correct letter forms, grammar, spelling, punctuation and other essentials are incorporated.

Business Organization and Management: A study of ownership and organization for management. The advantages and disadvantages of each type of organization for ownership are examined. The course also focuses attention on purchasing, merchandising, production, financing and personnel management.

Clerical Practice: Trains workers for initial office jobs in the clerical area. Develops student familiarity with and competency in basic clerical operations in typing office forms and reports, handling mail and telegraph services, filing, handling duplicating processes, and operating various office machines.

Secretarial Practice: Provides practical secretarial and office procedures experiences through work with realistic problems: composing and preparing business letters and reports; dealing with the public by telephone and in person; using office equipment; locating and using sources of information; filing and finding procedures and equipment. Good grooming, appearance, poise and personal effectiveness are emphasized.

MARKETING CURRICULUM

KEY OCCUPATIONS

D.O.T. Number	Occupation	1966 Employment	Needed to 1970
1-70.10	Sales Clerk, Counter	9,183	1,957
1-85,86,87,96,97	Salesman, Except to Consumers	9,148	3,139
1-80	Salesmen, General, to Consumers	4,287	1,132
1-57.10	Salesmen, Insurance	2,795	1,022
1-63 all	Salesmen, Real Estate & Real Estate Brokers	2,609	869
1-75	Salesmen, Specialties	13,584	3,370
7-35.100	Route Driver	2,804	560
	Total for Cluster (not for key occupations listed)	47,153	12,634

PROGRAM AREAS

1. Basic Marketing (Marketing I)

   Prepares student for entry level distributive occupations involving minimal, often routine, employment responsibility.

2. Career Development (Marketing II)

   Provides the student with opportunities to develop judgment skills in marketing and management. Designed to prepare students for jobs which involve competencies and responsibilities beyond the Basic Marketing level, but below the level needed at the middle management level.

3. Marketing Specialist

   Designed to prepare students for specialization in function (such as management or buying), product area (such as furniture and home furnishings, lumber, petroleum, food, or automotive), or service field (such as insurance or real estate).

4. Cooperative Occupational Experience

   Planned and supervised occupational experience for students enrolled in either the Career Development (Marketing II) or Marketing Specialist program. Under the supervision of a certified teacher coordinator, students work in business establishments for pay.

OBJECTIVES

The broad objectives of the Basic Marketing Program (Marketing I) are:

- to prepare high school students for entry employment in a basic distributive occupation,
- to qualify secondary school students for enrollment in a more advanced study of marketing, such as the career development (Marketing II) or Marketing Specialist program.

The broad objectives of the Career Development (Marketing II) program are:

- to prepare high school students for employment in intermediate marketing occupations requiring higher level study and technical skills,
- to qualify students enrolled in the career development program for more specific and individualized instruction in the Specialist Marketing program.

The broad objectives of the Specialist Marketing program are to:

- prepare students to work in specific marketing functions,
- prepare students for decision making responsibilities in his area of emphasis,
- provide the qualified student with the technical knowledge and the practical experiences needed to achieve sub-professional competence in his area of emphasis.

MARKETING OCCUPATIONS CURRICULUM

11th GRADE

First Semester	Second Semester
1 hr - Basic Marketing I	1 hr - Basic Marketing I
1 hr - Business Math	1 hr - Business Law
1 hr - Business Communication	1 hr - Pre-employment

12th GRADE

First Semester	Second Semester
1 hr - Business Management	1 hr - Business Management
Minimum of 10 hrs per week from:	Minimum of 10 hrs per week from:
1 hr - Career Marketing II and/or	1 hr - Career Marketing II and/or
1 hr - Marketing Specialist Lab. and/or	1 hr - Marketing Specialist Lab. and/or
1 hr - Employment Lab.	1 hr - Employment Lab.

SPECIALIST MARKETING OPTIONS

I. Insurance
  A. Bookkeeping I and II
  B. Introduction to Insurance
  C. Business Machines and Data Processing

II. Real Estate
  A. Introductory Real Estate
  B. Interior Decorating I
  C. Basic Architectural Drawing and Planning I

III. Construction, Automotive and Machine Sales
  A. Merchandise (non-textiles) I
  B. Basic Architectural Drawing
  C. Finished Wood Materials
  D. Basic Mechanics

IV. Clothing and Home Furnishings Sales
  A. Merchandise (Textiles I and Non-Textiles II)
  B. Finished Wood Materials
  C. Interior Decorating
  D. Basic Architectural Drawing and Planning I

V. Advertising

- A. Commercial Arts Lab
- B. Advertising Lab
- C. Merchandise (Textiles I and Non-Textiles II)

COURSE DESCRIPTIONS

Advertising Lab: Study of principles, methods, and practices used in advertising through all media. Specific instruction to develop skill in writing advertising copy such as descriptive copy, narrative copy, and exposition.

Basic Architectural Drawing and Planning: Basic skills and terminology of drawing and planning commercial structures, including interior layout, building exteriors, and store fronts.

Basic Mechanics: Subject matter and learning activities that explore basic principles of engines and fuels, electricity, and safety.

Bookkeeping I: Importance and functions of systematic adequate records in modern-day business. Beginning with the financial statements of a business, the course develops a logical sequential cycle of bookkeeping procedures using the double-entry system.

Bookkeeping II: Expanded operations of the bookkeeping cycle. Use of special journals, concepts of fixed assets, disposing of fixed assets, bad debts, and use of the cash register.

Business Communication: Review of grammar and application of communication to business functions. Proper sentence structure and logical arrangement of letters and other communications used in business. Business letters--application, inquiry, sales, good will, and credit and collection are studied. Spelling, punctuation, and business vocabulary are emphasized along with basic speaking skills including phonation, articulation, pronunciation, the art of listening, and planning and giving talks.

Business Law: The application of legal and ethical aspects of law and practice to business situations. Contracts and negotiable instruments are presented, along with sales, bailments, partnerships, corporations, insurance, and other legal matters.

Business Machines: Training in the use of the typical machines found in today's business office. Essential equipment includes the ten-key adding-listing machines, bookkeeping machines, print and rotary calculators, and duplicating equipment.

Business Management: Ownership and organization for management. Principles of business management, marketing and merchandising management, financial management, internal financial management, and government regulation of business.

Business Math: Fractions, decimals, cash records, markups and markdowns, payroll calculations, aliquot parts, percentages and simple interest. (Business mathematics should take precedence over algebra and other forms of higher mathematics in the business curriculum.)

Commercial Arts: Techniques of preparing layout and art work in advertising, layout, layout styles, types of layouts, preparing layouts using original art and stock art or mats.

Data Processing: Introduction to modern methods of sorting, filing, and retrieving of information through the use of electronic and automatic equipment. Use of computers and methods of programming as applied to business problems.

Employment Lab: Practical application of classroom learning in a local business. Coordination by both the school and the employer is required. This phase of the marketing program, taken along with the Marketing II course, receives school credit for part-time occupational experiences. The student is paid the prevailing wage rate by the employer.

Finished Wood Materials: Development and use of wood products as applied to furniture, paneling, flooring, decorative accessories, fixtures and construction, luggage, sporting equipment, boats, display signs and stands, packaging, airplanes, toys, and musical instruments. Physical properties of hardwoods, such as workability, hardness, density, porosity, elasticity, flexibility and bending strength, resonance and tonal qualities, shock-resistance, strength-weight ratios, stiffness, ability to hold paint and finishes or take a polish, insulating properties, stability, vibration-resistance, light weight, large sizes, abrasion-resistance, and durability.

Insurance: Fundamentals of risk and risk bearing. Includes insurance contracts, types of insurance, and government regulation of insurance.

Interior Decorating I: Fundamentals of decorating, such as color, light, design, style, fashion, furnishings, room models, problems in planning individual rooms, and use of decorative accessories.

Marketing I: Introduction to the fields of retailing, wholesaling and service. Emphasis is on the economics of business, the nature of and scope of marketing, government regulation of business, retail and wholesale market structure, and basic entrance jobs leading to careers.

Marketing II: Introduction to fashion merchandising, human relations, supervision, purchasing, buying and sales promotion.

Merchandise - Textiles, Non-Textiles: Basic textile information--textile fibers, fabric construction, fabric finishes, and fabric identification--and study of non-textiles such as wearing apparel and accessories, home furnishings and hardware, and automotive products.

Pre-Employment: Basic knowledge needed by all students before entering the world of work. Includes practical economics as it affects and is affected by government, business and industry, and unions. Includes personality development, personal data, job qualifications, job application, interview, job security and advancement, careers and opportunities.

Real Estate: Fundamentals of contracts, ownership, financing, and careers in real estate.

AGRICULTURE CURRICULUM

KEY OCCUPATIONS***

D.O.T.	Occupation	1966 Employment	Needed to 1970
3-01 - 3-09	Farm Operator	26,700	4,085
3-11 - 3-19	Hired Hand (year-round)	13,100	1,453
0-68,24	Forester Aide	368	148
3-40.01, 3-40.30	Gardener & Grounds Keeper	1,566	338
3-41 - 3-49, 3-97.40	Agriculture Service, Miscellaneous	763	288
3-0 - 3-39	City & County Govt. Misc. Serv.	756	156
3-35	Ag. Machinery Service*	2,100	1,272
3-39 - 3-40	Nursery**	1,780	312
	Total for Cluster (not for key occupations listed)	48,346	8,281

*Survey by: Smith, J. Malcolm, Skill Survey by Pacific Northwest Dealers Association, 606 Franklin Building, Portland, Oregon, November 1965.

**Wood, A. Edsal, Oregon Nursery Survey, 819 NE 1222 Ave., Portland, Oregon, August 1966.

***List of agricultural occupations is incomplete. Additional surveys are currently being conducted and others planned which will more adequately reflect employment needs.

OBJECTIVES

Help students develop:

- ability to begin and advance in production agriculture,
- ability to produce and/or market and process agricultural crops advantageously,

- ability and understanding required for providing efficient buildings and mechanization in production agriculture,
- ability to make decisions based upon maintenance and analysis of accurate records,
- understanding of conservation of soil, water, and other natural resources,
- abilities to understand and apply principles of soil science, plant science, animal science, economics, management and mechanization as they relate to agricultural occupations,
- understanding of principles of selling supplies and providing services to meet specific needs of production agriculture,
- understanding of basic principles of efficient production agriculture,
- knowledge required for selecting agricultural occupations through work experience under proper supervision,
- understanding and appreciation of agriculture's importance to the nation's economy and impact upon the lives of all citizens,
- ability to become an effective member of the Future Farmers of America and other agricultural oriented organizations.

COURSE SEQUENCE

11th GRADE

First Semester	Second Semester
1 hr - Business Law (Related Course) 2 hrs - Agricultural Science	1 hr - Basic Mechanic (Related Course) 2 hrs - Agricultural Science (Continuation of first semester)

The agricultural curriculum which prepares students for employment in both farm and off-farm agricultural occupations uses the agricultural production (10th grade) class and the agricultural science (11th grade) course as the foundation upon which the 12th grade program is developed. All agricultural curriculums will continue the agriculture cluster at the 12th grade and may provide one or more or a combination of the options outlined below. The number and kinds of options provided will depend upon the size of the student population and the needs of the local school district.

12th GRADE (LANDSCAPE HORTICULTURE OPTION)

First Semester	Second Semester
1 hr - Drafting and Sketching (Related Course) 2 hrs - Landscape Horticulture	1 hr - Basic Marketing (Related Course) 2 hrs - Landscape Horticulture (Continuation of first semester)

12th GRADE (AGRICULTURAL MECHANICS (OFF-FARM) OPTION)

First Semester	Second Semester
1 hr - Internal Combustion Engines (Related Course) 2 hrs - Agricultural Mechanics	1 hr - Hydraulics and Pneumatics (Related Course) 2 hrs - Agricultural Mechanics (Continuation of first semester)

12th GRADE (AGRICULTURE SUPPLY)

First Semester	Second Semester
1 hr - Basic Marketing (Related Course) 2 hrs - Agriculture Supply	1 hr - Economics (Related Course) 2 hrs - Agriculture Supply (Continuation of first semester)

12th GRADE (FORESTRY OPTION)

First Semester	Second Semester
1 hr - Drafting and Sketching (Related Course) 2 hrs - Forestry	1 hr - Economics (Related Course) 2 hrs - Forestry (Continuation of first semester)

12th GRADE (FARM OPERATION & MANAGEMENT OPTION)

First Semester	Second Semester
1 hr - Bookkeeping I (Related Course) 2 hrs - Farm Operation and Management	1 hr - Economics (Related Course) 2 hrs - Farm Operation and Management (Continuation of first semester)

COURSE DESCRIPTIONS

Agricultural Science: Principles and practices in animal science, plant science and agricultural mechanics. The instructional program should be coordinated with the instructions provided in "Agricultural Production" at the 10th grade. In animal science the instruction is centered around nutrition, genetics, physiology, animal health and marketing. In plant science the instruction is centered around genetics, physiology, pest and disease control and marketing. Continued instruction in Agricultural Mechanics based on the instruction offered at the 10th grade is provided. Farm construction and maintenance is emphasized. Record keeping, as it applies to students' supervised farming programs and/or occupational work experience programs, and leadership instruction, related to the Future Farmers of America organization, are provided throughout the year.

Landscape Horticulture: Production, sales and services in greenhouses, nurseries and garden centers; establishment and maintenance of turf and landscape areas. Specific instruction in employment opportunities, plant identification, plant propagation, soils, fertilization, weed control, pests and diseases are provided as they relate to landscape horticulture. Mechanics instruction as it relates to equipment and building used in the landscape horticulture industry is included. Record keeping (cost accounting) and landscape design instruction are included. Students are given opportunity for placement in a cooperative work experience program.

Agricultural Supply: Principles and practices involved in providing consumable supplies and related technical service for the production phase of agriculture. Students are given the opportunity for placement in a cooperative work experience program.

Forestry: Management of trees grown as a crop. Specific instruction in forestry occupations. Selection, use, and maintenance of tools and equipment, tree identification, land surveying, forest management and protection, and the use of forest land are included. Other aspects of forestry involved are logging, wood utilization, recreation and conservation. Students are given the opportunity for placement in a cooperative work experience program.

Farm Operation and Management: Practical and economical management and operation of a productive commercial size farm. Special emphasis is placed on farm accounts and performance records, budgeting and analysis, purchasing and marketing, financial and legal management, farm organizations and governmental programs, and use and management of farm machinery. Students have supervised farming programs and/or are given the opportunity for placement in a cooperative work experience program on a commercial farm.

Agricultural Mechanics (off-farm): Marketing and service of agricultural power and machinery and related equipment. Opportunities are provided for students to study and gain experience in assembly, adjustment, maintenance, and repair of agricultural machinery, structures, and conveniences. Students learn tool processes and how to perform services. Students are given the opportunity for placement in a cooperative work experience program.

SUGGESTED RELATED COURSES:

Bookkeeping I: Introduces the student to the importance and functions of systematic adequate records in modern-day business. Beginning with financial statements of a business, the course develops a logical sequential cycle of bookkeeping procedures using the double-entry system.

Internal Combustion Engines: Operating principles of various types of internal combustion engines and component parts. Students will be given instruction in theory of engine operation and function of engine components. Practical experience will include instruction in engine servicing and maintenance involving use of standard shop equipment, hand tools and machine tools.

Hydraulics and Pneumatics: Fundamental principles and applications of hydraulic and pneumatic systems. Includes study of the basic hydraulic and pneumatic system components and their relationship to the complete circuit or system. Students will learn the use, selection, installation and maintenance of hydraulic and pneumatic systems in agriculture mechanics.

Basic Marketing: Introduces the student to the fields of retailing, wholesaling and service occupations. Through emphasis on such topics as salesmanship, sales psychology, job interview, and pre-employment training, marketable skills are developed.

Business Economics: Introduces the student to important aspects of consumer economics as well as problems of business and industry. Problems of organization, finance, operation and management are studied, as well as matters of national concern such as gross national product, supply and demand, earnings, savings, investment, and the role of government in economic affairs.

Welding: Fundamentals of oxyacetylene and electric arc welding of mild steel. Related classroom instruction is correlated with manipulative practice to enable the student to become familiar with principles involved in fabrication, repair, and maintenance of agriculture machinery.

Drafting and Sketching: Prepares the student to perform simple operations in sketching; lettering; use drawing tools and equipment; perform basic operations in drawing; make layouts; make two-view and three-view drawings; make ismetric pictorial drawings; understand common construction methods and common conventions used in drawing.

Basic Mechanics: Basic principles of engines, fuels, electricity, and general shop safety practices.

FOOD SERVICE CURRICULUM

KEY OCCUPATIONS

D.O.T.	Occupation	1966 Employment	Needed to 1970
2-29.51	Bus Boys	1,320	180
2-26.01, 2-26.31	Cooks, Chef	1,008	211
2-26.03, 2-26.05	Cooks, Dinner	4,735	903
2-26.04, 08, 33	Cooks, Fry and Broiler	2,306	388
2-29.61, 62	Dishwasher	3,118	486
2-25	Housekeepers, Stewards & Hostesses	941	199
2-27.21,22	Waiters & Waitresses, Countermen	898	133
2-27.11 - 17	Waiters & Waitresses, Informal	11,010	2,041
4-01, 4-02	Baker	849	110
5-58	Meat Cutters	1,467	241
	Total for cluster (not for key occupations listed)	34,636	6,187

OBJECTIVES

Help students develop:

- knowledge of nutrition as related to menu planning and food preparation,
- understanding of the importance of safe food handling, essential health practices and sanitation,
- understanding of basic menu planning,
- skill in food preparation through accuracy in recipe reading, proper techniques, accuracy in weighing and measuring, and correct use of quantity food service equipment,

- ability to recognize standards of excellence and quality in food,
- skill in the management of quantity meal preparation and service,
- understanding of basic food cost accounting,
- ability to evaluate new food products,
- understanding of business procedures in food service,
- understanding of basic principles in food purchasing and to provide some experience in food buying.

COURSE SEQUENCE

11th GRADE

First Semester	Second Semester
1 hr - Preparation for Employment 2 hrs - Introduction to Food Service	1 hr - Health, Sanitation and Safety 2 hrs - Food Service Knowledge and Skills

12th GRADE

First Semester	Second Semester
1 hr - Nutrition, Menu Planning and Serving 2 hrs - Quantity Food Preparation and Cooperative Work Experience	1 hr - Business Procedures Related to Food Service 2 hrs - Continuation of First Semester

COURSE DESCRIPTIONS

Preparation for Employment: Designed to help students develop a realistic picture of job opportunities in food service; requirements for success in obtaining and holding a job; and effective customer, employer-employee relationships. Emphasis is upon management practices which promote effective living at home and on the job.

Health, Sanitation and Safety: A one-semester course designed to develop understanding of health and sanitary practices that insure food safety. Stresses importance of habitual safety practices in the kitchen. Includes study of regulatory agencies, physical examinations, health and sanitation practices, and safety practices in relation to food service.

Nutrition and Menu Planning: A review of basic nutrition. Includes special aspects of nutrition, overweight and underweight, nutrition for children, and geriatric nutrition. Emphasis is upon menu planning for quantity food service.

General Business Procedures Related to Food Service: Business procedures in food service. Includes practices, methodical cost control, adequate record keeping, and food economics (influence of transportation, processing, etc.).

Introduction to Food Service: This first course in a four semester sequence provides basic information needed for all food service work. Includes use, care and storage of equipment; correct use of recipes; kitchen arrangement; and acquisition of good work habits. Preparation of yeast breads, salads and salad dressings, sandwiches and cookies for the school cafeteria provides experience in quantity cooking and some supervised work experience.

Food Service Knowledge and Skills: Designed to provide additional laboratory and supervised work experience. Includes use, care and storage of equipment; effective management of time and energy; and quantity food preparation of foods which can be served for any meal of the day (including eggs, quick breads, desserts, beverages, vegetables and fruit). Work experience will be provided through serving meals to faculty or other large groups.

Quantity Food Service: Provides more advanced quantity food preparation and one hour of cooperative work experience. Foods to be prepared include those served for luncheon reservations. Includes review of salads, quick breads, vegetables, fruits and desserts and additional learnings in the preparation of meat, poultry and fish. Continued emphasis upon use, care and storage of equipment; management practices; clean-up procedures; safety; health; and sanitation. Special emphasis is given to table setting and serving.

Quantity Food Preparation: Provides additional experience in quantity food preparation and service. Includes catering foods for teas and other special occasions, as well as preparing and serving food for dinner reservations. Recipe evaluation and survey of convenience foods may be included if time permits.

CONSTRUCTION CURRICULUM

KEY OCCUPATIONS

D.O.T.	Occupation	1966 Employment	Needed to 1970
4-32	Cabinet Maker	974	198
5-25	Carpenters	8,168	674
5-26	Cement Finishers	596	144
5-24	Masons, Brick & Stone & Tile	591	147
5-83.611	Mechanics, Building Maintenance	1,199	212
5-27	Painters, Const.	1,792	397
5-30	Plumbers, Gas & Steam Fitters	2,547	369
6-36	Furniture Mfg.	813	115
	Total for Cluster (not for key occupations listed)	23,658	2,826

OBJECTIVES

Help students develop:

- knowledge of construction materials, their sources, production, development, characteristics and uses,
- understanding of the principles of planning, interpretation of plans, estimating and procedures of construction,
- skill in the use, care, and maintenance of tools, machines, and equipment utilized in building construction,
- ability to understand and apply city, county, and state laws and regulations affecting the building construction industry,
- understanding of building functions, location, and designs currently built to serve the needs of man in industry, business, and residential activities,
- knowledge of the manufacturing processes and distribution of products and prefabricated units utilized in the construction industry,
- understanding of the work flow and responsibilities of the various skilled trades and crafts which must execute the plans and specifications provided by the professional designer.

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COURSE SEQUENCE

11th GRADE

First Semester	Second Semester
1 hr - Architectural Drawing and Planning 2 hrs - Fundamentals of Building Construction	1 hr - Blueprint Reading and Sketching 2 hrs - Building Materials & Construction Procedures --Wood, Masonry

12th GRADE

First Semester	Second Semester
1 hr - Welding Fundamentals 2 hrs - Structural & Interior Building Materials and Procedures	1 hr - Construction Accounting and Computing 2 hrs - Advanced Construction Techniques

COURSE DESCRIPTIONS

Architectural Drawing and Planning: A lecture and laboratory course in in basic skills and terminology of drawing and planning a residential or commercial structure. Emphasizes working drawings and specifications related to standard construction procedures, electrical plans, mechanical plans, differences in design and construction, with steps in planning each phase of the blueprint.

Blueprint Reading and Sketching: Principles of reading and interpreting blueprints and techniques of making shop sketches applied to actual industrial parts.

Construction Accounting and Computing: This course deals exclusively with cost accounting. Materials and labor costs are determined on various kinds of work performed in construction. Estimating procedures and cost accounting records are emphasized. Use of mathematical formulas and rule of thumb techniques are presented.

Welding Fundamentals: The fundamentals of fabrication techniques found in today's industry. Includes ferrous and non-ferrous welding, adhesives, metal fasteners, and metal forming and shaping. Emphasizes student learning through practical application.

Fundamentals of Building Construction: Processes and requirements of the building construction industry. Includes study of the fundamentals of construction, and properties and characteristics of materials used in both residential and commercial buildings. Through observation and practical shop experience students learn methods of structural support and uses of building materials for various types of building construction. Field trips are taken to visit architectural firms, city planning departments, and on-going construction.

Building Materials and Construction Procedures--Wood, Masonry: Study of manufacturing processes and utilization of wood and masonry products of the building construction industry. Application and characteristics of materials relating to building design and construction methods are emphasized. Practical experience in the shop consists of actual construction, using materials and methods of industry. Safe use of industrial tools and machines is stressed throughout. Visits to manufacturers of building materials, prefabrication industries and other related businesses are included when possible.

Structural and Interior Building Materials and Procedures: The second course in the study of building materials and construction methods. Uses of steel, aluminum, glass and synthetic materials are studied as they relate to the building construction industry. Consideration is given to utilization of these materials in structural design and interior building functions. Students follow the same pattern of study as for the first course in learning construction methods through actual construction.

Advanced Construction Techniques: Study of advanced processes and procedures of construction. Subject areas include advanced building construction practices, planning and design, and interior systems.

WOOD PRODUCTS CURRICULUM

KEY OCCUPATIONS

D.O.T. Number	Occupation	1966 Employment	Needed to 1970
4-29	Grader, Logs & Lumber	1,236	157
4-33	Millman, Woodworking	508	104
6-30	Logging Occupations	5,074	416
6-29	Lumber & Log Grader & Scaler	1,711	168
6-41	Pulp & Paper Mfg.	931	220
6-31	Sawmill Occupations	5,885	497
6-39.470,6-39.519	Veneer & Plywood Mfg.	4,840	433
	Total for Cluster (not for key occupations listed)	21,924	2,218

OBJECTIVES

To help students develop:

- understanding of the history and the development of the forest products industry in the United States with emphasis on the Pacific Northwest,
- understanding of the major forest products and the various manufacturing processes and plants.
- ability to identify the various types of products, their grades, uses and characteristics,
- knowledge of the characteristics of the more common machines used in the industry.

COURSE SEQUENCE

11th GRADE

First Semester	Second Semester
1 hr - Blueprint Reading and Sketching 2 hrs - The Forest Industry	1 hr - Industrial Science 2 hrs - Logging Practices and Basic Wood Products

12th GRADE

First Semester	Second Semester
1 hr - Industrial Maintenance Practices and Machines 2 hrs - Finished Wood Materials	1 hr - Welding Fundamentals 2 hrs - Advanced Wood Processes and Materials

COURSE DESCRIPTIONS

The Forest Industry: Products, processes, and occupations related to forest industries. Includes identification of woods, study of characteristics which make them suitable for various industries uses, and a survey of the manufacturing processes from harvesting to production of finished goods.

Logging Practices and Basic Wood Products: Modern logging practices and manufacturing of basic wood products; theories and processes of timber harvesting, log handling, grading, and production of rough and finished lumber and veneer. Consideration is given to quality, sizes, types, and uses of forest products. Visits to forest and lumber processing industries are made for observation of on-the-job practices. Safety practices of the industry are stressed.

Finished Wood Materials: Development and use of modified wood products (plywood, particle board, hardboard, and softboard). Manufacturing processes and application of these materials. Study of theories and processes through laboratory testing, observation, and experimentation manufacturing. Plant tours are encouraged.

Advanced Wood Processes and Materials: Study of wood processing and products. Manufacture of pulp and paper; various types of pulp production; consideration of cost analysis and quality control. Study of plant safety practices, fire control procedures, and protective equipment.

Blueprint Reading and Sketching: Principles of reading and interpreting blueprints and techniques of making shop sketches applied to actual industrial parts.

Industrial Science: An introductory course in practical physics covering systems of measurement, properties of matter, mechanics and machines, and heat and temperature. Laboratory time is provided to allow for demonstrations and experiments.

Industrial Maintenance Practices and Machines: Care and use of industrial tools and machines. Theories and processes in the maintenance and repair of industrial plant and transportation equipment. Students work with precision measurement and layout tools, hand tools, and machine tools such as grinders (bench and portable), drill press, electric drills, and metal lathe in performing such operations as alignment balancing, adjusting to close tolerances, and assembly.

Welding Fundamentals: The fundamentals of fabrication techniques found in today's industry. Includes ferrous and non-ferrous welding, adhesives, metal fasteners, and metal forming and shaping. Emphasis will be placed on student learning through practical application.

METAL WORKING CURRIÇULUM

KEY OCCUPATIONS

D.O.T. Number	Occupation	1966 Employment	Needed to 1970
0-67.18,0-67.982	Technician (engineering)	1,449	118
4-75	Machinist	4,087	912
4-80	Sheet Metal Worker	1,850	368
4-82	Skilled Foundry (other than molder)	408	121
4-85	Welders	2,822	495
6-72 - 6-95 except 6-78.632 and 6-85	Metal Working, except floor assemblers, machine shop and machine welders	2,746	836
6-78.632	Metal Working Floor Assembler, Machine Shop	1,312	256
	Total for Cluster (not for key occupations listed)	18,708	3,643

OBJECTIVES

To help students develop:

- skills and knowledges in the use of basic metalworking tools and machines,
- ability to identify special characteristics of metals in the process of machining, assembling, forming and finishing,
- awareness of modern industrial methods and practices of the metalworking industry.

COURSE SEQUENCE

11th GRADE

First Semester	Second Semester
1 hr - Blueprint Reading and Sketching 2 hrs - Metalworking Practices and Machines	1 hr - Industrial Science 2 hrs - Machining and Forming Techniques

12th GRADE

First Semester	Second Semester
1 hr - Welding Fundamentals 2 hrs - Materials and Metal Processing	1 hr - Basic Electricity 2 hrs - Fabrication Methods and Production Techniques

COURSE DESCRIPTIONS

Metalworking Practices and Machines: Safe and correct use of industrial tools and machines of the metalworking industries. Includes theories and processes such as metal cutting, measurements, laying out, fastening methods, and shaping. Students become familiar with use of precision measuring and layout tools, bench tools, and machine tools, including grinders, drill press, electric drills, bandsaws, metal lathe, power saws, and bending and forming machines.

Machining and Forming Techniques: A study of the processes and operation of machines commonly found in today's metalworking industries. Emphasizes metal removal (involving single and multiple cutting edges), metal bending, shearing and forming. Students are instructed in operation of equipment, including metal lathe, milling machine, shaper, grinders, rolling machines, brakes, sheet metal shears, punches and bending machines.

Materials and Metal Processing: Physical and chemical characteristics of common materials found in the metals industry. Study of ferrous and non-ferrous metal, and non-metallic and synthetic materials as related to the manufacturing and refining processes of these materials. Instruction emphasizes practical application. Materials characteristics studied include expansion and contraction, internal stresses and strains, workability, physical structure, and heat treatment.

Fabrication Methods and Production Techniques: Principles of design, manufacturing and production control of goods. Methods of production, including assembly, modern methods of machining, and analysis of production costs are considered. Practical shop experiences involve problems of production, emphasizing machine limitations and advantages, tooling techniques, and methods of assembly.

Basic Electricity: A basic course in electrical fundamentals covering magnetism and electricity. Laboratory time is provided for demonstration and experiments to help clarify principles and procedures.

Industrial Science: An introductory course in practical physics covering system of measurement, properties of matter, mechanics and machines and heat and temperature. Laboratory time is provided to allow for demonstrations and experiments.

Blueprint Reading and Sketching: Principles of reading and interpreting blueprints and techniques of making shop sketches applied to actual industrial parts.

Welding Fundamentals: The fundamentals of fabrication techniques found in today's industry. Includes ferrous and non-ferrous welding, adhesives, metal fasteners, and metal forming and shaping. Emphasis will be placed on student learning through practical application.

HEALTH CURRICULUM

KEY OCCUPATIONS

D.O.T. Number	Occupation	1966 Employment	Needed to 1970
0-52.83, 91	Nurse, Licensed Practical	1,021	313
0-50.01, 015	Technician (medical)	1,106	269
0-50.04	Technician (X-Ray, Medical Serv.)	401	92
1-32	Physicians' & Dental Assts.	1,310	282
2-42	Attendants, Hosp. & Inst.	8,427	2,158
2-38	Nurses, Practical, unlicensed & First Aid Attendant	1,221	249
0-50.06	Technician (dental)	294	39
	Total for Cluster (not for key occupations listed)	14,554	3,587

OBJECTIVES

To assist students to:

- integrate principles from related subjects such as science, mathematics and communications to provide a basis for developing health occupation skills,
- recognize personal and community health needs,
- perform basic health service skills in personal and family care,
- use appropriate medical terminology,
- effectively use communication as a tool in working with health situations,
- identify service opportunities in meeting individual and community health needs as a member of the therapeutic health team.

COURSE SEQUENCE

11th GRADE

First Semester	Second Semester
1 hr - Related Elective (drawn from Science or Office Courses) 2 hrs - Body Structure and Function	1 hr - Related Elective (drawn from Science or Office Courses) 2 hrs - Microbes and Disease

12th GRADE

First Semester	Second Semester
1 hr - Employer-Employee Relations 2 hrs - Health Service Skills	1 hr - Patient Relations 2 hrs - Continuation of First Semester

COURSE DESCRIPTIONS

Body Structure and Function: Designed to provide basic understanding of normal structure and function of the human body. Basic medical terminology is introduced. Instruction consists of lecture and laboratory work.

Microbes and Disease: A study of microorganisms which cause common diseases. Identification and control of common diseases. Body response to disease.

Employer-Employee Relations: A course designed to provide an understanding of the rights and responsibilities of employees. Study of population, economic and employment trends, and hours and working conditions.

Health Service Skills I: Provides opportunity for the student to apply the basic health concepts through manipulative skills such as comfort and hygiene measures, diagnostic and treatment measures, body mechanics and lifting techniques, sterilization of medical and surgical equipment and supplies, handling sterile supplies, safety practices and first aid. Laboratory experiences and field investigations are included.

Patient Relations: A survey of basic concepts of behavior, factors influencing behavior, adjustment processes in mental and social health. Development of techniques and social skills essential for working effectively with patients.

Health Service Skills II: Continuation of Health Service Skills I.

ELECTRICITY-ELECTRONICS CURRICULUM

KEY OCCUPATIONS

D.O.T. Number	Occupation	1966 Employment	Needed to 1970
4-98, 500	Electrical Machinery Mfg.	376	87
5-83.410 5-83.449	Electrical & Electronic Repairmen, not elsewhere classified	1,441	314
4-97	Electrical, Construction	2,747	488
5-83.00, 5-83.069	Household Appliance Servicemen and Installers	845	161
5-53	Linemen, Servicemen, Repairmen	3,038	309
6-98.014	Electronics Unit Assembler	1,862	108
	Total for Cluster (not for key occupations listed)	12,106	1,756

OBJECTIVES

To help students develop:

- skill in use of common hand tool and measuring instruments of the electricity-electronics industry,
- ability to solve problems involving resonance, voltage gain, Ohm's law, vectors, coils, transformers, motors and generators,
- ability to effect solutions of electrical circuit problems in actual field situations.

COURSE SEQUENCE

11th GRADE

First Semester	Second Semester
1 hr - Basic Metal Working Practices and Machines 2 hrs - DC Circuit Principles and Analysis	1 hr - Industrial Science 2 hrs - AC Circuit Principles and Analysis

12th GRADE

First Semester	Second Semester
1 hr - Blueprint Reading and Sketching 2 hrs - Electron Tubes and Solid State Devices	1 hr - Welding Fundamentals 2 hrs - Industrial Controls and Instrumentation

COURSE DESCRIPTIONS

DC Circuit Principles and Analysis: Introduction to basic principles and techniques of the electricity-electronics area. Includes study of elementary electron physics, magnetic laws, principles, circuit analysis, and DC motors and generators. Includes elementary study of laboratory type measuring equipment.

AC Circuit Principles and Analysis: A continuation of Circuit Principles and Analysis. Study of vector analysis and basic AC theory applied to transformers, generators, motors and polyphase systems. Experimentation is stressed.

Electron Tubes and Solid State Devices: Operation and application of vacuum tubes and solid state devices, including silicon controlled rectifiers. Circuit parameters are studied in the laboratory through testing and analysis of circuits.

Industrial Controls and Instruments: Study of sensing elements, measurement devices, control devices and instrumentation. Includes elementary circuit design and application and testing of typical industrial control circuits.

Basic Metal Working Practices and Machines: Basic study of the metal working industry. Emphasizes basic theories and processes of metal curring, measurements, laying out, fastening methods, and shaping. The student will become familiar with the use of tools including: measuring and layout tools, bench hand tools, and machine tools.

Industrial Science: An introductory course in practical physics covering systems of measurement, properties of matter, mechanics and machines, and heat and temperature. Laboratory time is provided to allow for demonstrations and experiments.

Blueprint Reading and Sketching: A course in which principles of reading and interpreting blueprints and techniques of making shop sketches are applied to actual industrial parts.

Welding Fundamentals: A lecture, demonstration and laboratory course covering fundamentals of fabrication techniques found in today's industry. Areas of study include ferrous and non-ferrous welding, adhesives, metal fasteners, and metal forming and shaping. Emphasis is on student learning through practical application.

SECTION VI

PROGRAM ARTICULATION: SECONDARY AND COMMUNITY COLLEGE

High School and Community College Roles in Occupational Education

Increasing development of occupational education in public education settings inevitably brings questions. Among the more prominent of these are questions concerning the level or levels at which occupational education should be offered and, if it is to be offered at more than one level, the relationship of occupational education at one level to that at another.

For the reasons outlined below, the position taken here is that programs in occupational education are urgently needed at both secondary and community college levels. (As has been stated in Section I, occupational exploration and orientation is needed much earlier.)

Secondary Programs

The basic purpose of high school programs in occupational education is to serve the great numbers of students whose needs are not being met in the traditional structure of secondary education. In our college-oriented society, the fact that more than one half of our young people do not attend a college of any sort seems often to go unnoticed. These youngsters especially need occupational education as a vital part of general education if they are to become productive citizens in a complicated society. In the context of serving these needs, high school programs neither complement nor overlap the purpose and function of any post-high school educational unit. They have as one of their responsibilities the specific occupational education of young people who do not continue beyond high school, or who drop out before graduation from high school. At the same time they should provide educational incentive for many who are potential high school dropouts.

In addition, occupational education in the high school is designed to complement post-high school education. Some of the students served by it will find their way into technical-vocational education at the post-high school level, either in the classroom or on the job. Certainly, some youngsters who would never have attempted advanced training will be motivated to do so solely because of their experiences in secondary programs. In this context, secondary occupational education does play a complementary role and it needs to be carefully articulated with post-high school opportunities for education and training, both in the school and on the job.

Clearly, the role and functions of occupational education at the high school level are unique and specific to meeting the job preparation needs of large numbers of secondary students. At the same time, they are complementary to programs of advanced and continuing occupational education and training.

Programs in the Community College

Occupational education for young people who have left high school, either as graduates or dropouts, and for adults who need upgrading or retraining logically belongs in the community college.

While high school programs generally should be centered upon the skills and knowledge common to occupations comprising a cluster and required for entry into an occupational "area" or "family," the technical-vocational programs at the community college are designed to be more specific and specialized. Some of them are highly sophisticated.

Typical of occupational education offerings of the community college are:

(1) Semi-professional, non-engineering programs (for example, those in the paramedical field).
(2) Engineering technician programs.
(3) Programs for industrial occupations that are highly technical.
(4) High level programs in office and distributive occupations.

(5) Programs for Technical Agriculture Occupations that relate to both the production and the agri-business phases of agriculture.

(6) Partial responsibility (shared with the high school) for providing training for skilled trades and office occupations, and for providing semi-skilled training for out-of-school youth and adults.

(7) Extension classes for those already employed, including apprentices.

Suggested Criteria for Deciding Program Level

The preceding does not, of course, fit all operating situations at either the secondary or post-high school levels. It may, in fact, be impossible to devise precise criteria for determining program level that will be applicable in all cases. However, the criteria listed below, which have been adapted from a paper prepared by Dr. Lynn A. Emerson*, should be helpful in identifying programs for inclusion at the community college level.

A program may best be offered at the community college level:

(1) If the occupation involved is generally classified as semi-professional.

(2) If the occupation involved demands greater maturity at entry than the average high school graduate possesses.

(3) If the prestige of a community college is needed to attract the type of student required for the program.

(4) If on-the-job learning time required for development of full occupational competence is substantially lower for the graduate of a community college program as compared with that for a high school graduate in the same field.

(5) If the curriculum content is of a level and type that requires high school graduation and completion of specific courses as a minimum foundation for entry.

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*Dr. Emerson, Professor Emeritus of Industrial Education, Cornell University, has long been recognized as one of America's foremost authorities in technical-vocational education. Since his retirement from Cornell, he has served on many federal and state projects and committees, including the President's Panel of Consultants on Vocational Education.

(6) If the area involved seeks to meet the needs of persons who left or graduated from high school with no special occupational training and later seek such training to prepare themselves for better jobs.

(7) If there is a need in the community for a wide range of evening courses which require technical equipment not normally available in high school occupational programs.

To summarize, both the high school and the community college have unique and indispensable roles to fulfill if the occupational needs of the state are to be met. If the essential articulation between high school and post-high school programs is to be achieved, there needs to be a clear identification of and adherence to the objectives of each.

Articulation of Occupational Education Programs

As used here, articulation in education means the process of transfer and progression of students from one level of educational offerings to the next higher level. Clearly, effective articulation is needed both within single educational units and between separate education agencies wherever joint concerns and responsibilities exist. The primary concern here is with the latter aspect of articulation.

Effective articulation would insure smooth transition for students, continuity in the educative process, efficient development of student abilities, and maximum use of resources. It would minimize confusion, conflict, and needless readjustment and duplication.

Cluster Based Articulation Areas

The broad based cluster curriculums outlined in Section V may readily be aligned with appropriate specialized programs found in community colleges. Most community college programs relate directly to one or another of the twelve broad secondary clusters. Moreover, as has been emphasized, the twelve clusters are illustrative only. Other clusters specific to employment needs of a particular area may be developed and articulated with post-high school specialties.

Chart IV, below, illustrates alignment of the twelve cluster based curriculums with typical community college programs.

CHART VI

High School Cluster Curriculums	Typical Community College Specialties
Mechanical	1. Aircraft Design & Drafting
	2. Airframe & Power Plant Mechanic
	3. Industrial Technology
	4. Mechanical Technology
	5. Automotive Mechanics
	6. Diesel Technology
	7. Mechanical Drafting & Machine Design
	8. Automotive Body Repair
	9. Industrial Mechanics
	10. Marine Technology
	11. Automotive Tune-up and Instrumentation Technology
	12. Office Machines Technology
	13. Heavy Equipment Technology
General Clerical	1. General Office Practice
	2. Library Assisting
	3. Instructional Materials Technology
	4. Clerk-Typist
	5. File Clerk
	6. Data Processing
	7. Sales Clerk
Basic Marketing	1. Business Management
	2. Radio Communications
	3. Real Estate and Insurance
	4. Retail Sales, Purchasing and Merchandising
	5. Transportation and Traffic Management
	6. General Business
	7. Technical Sales
	8. Hotel-Motel Management
	9. Mid-management
Agriculture	1. Agricultural Management
	2. Agriculture Equipment Repair
	3. Agriculture Technology
	4. Forestry Aide
	5. Forestry Technology
	6. Landscaping - Grounds Maintenance
	7. Livestock Technology
	8. Range-Ranch Management
	9. Recreation - Conservation Technology

CHART VI (cont.)

High School Cluster Curriculums	Typical Community College Specialties
Agriculture (cont.)	10. Dairy Technology
	11. Horticulture & Floriculture
	12. Irrigation Technology
	13. Agricultural Supply
	14. Agricultural Chemicals
Food Service	1. Food Preparation
	2. Cooking & Baking
	3. Institutional Cookery
	4. Restaurant Management
	5. Food Processing Technology
	6. Cooks & Chef Training
Building Construction	1. Surveying
	2. Technical Drafting
	3. Structural Engineering Technology
	4. Civil Engineering Technology
	5. Highway Engineering Technology
	6. Architectural Technology
	7. Building Construction Technology
	8. Carpentry
	9. Construction Technology
	10. Building Maintenance
Wood Products	1. Forest Product Technology
	2. Wood Industries Technology
	3. Pulp and Paper Technology
Secretarial	1. Secretarial Practice
	2. Legal Secretary
	3. Executive Secretary
	4. Court Stenographer
	5. Secretary - Medical or Dental
	6. Technical Secretary
	7. Stenography
Metal Working	1. Machine Tool Technology
	2. Mechanical Technology
	3. Welding Technology
	4. Machine Processes Technology
	5. Welding Processes Technology
	6. Metallic Inert Gas Welding
	7. Production Welding
	8. Machine Shop
	9. Metal Fabrication

CHART VI (cont.)

High School Cluster Curriculums	Typical Community College Specialties
Bookkeeping and Accounting	1. Accounting & Financial Management
	2. Executive Assistant
	3. Accounting Systems Programmer
	4. Accounting Technology
	5. Bookkeeping
	6. Data Processing
	7. Purchasing
Health Occupations	1. Dental Assisting
	2. Dental Laboratory Technology
	3. Medical Assisting
	4. Practical Nursing
	5. Technical Nursing
	6. X-Ray Technology
	7. Medical Laboratory Assisting
	8. Environmental Health Technology
	9. Optical Technology
	10. Medical Library Technology
	11. Dental Hygiene
	12. Occupational Therapy Assisting
	13. Physical Therapy Assisting
Electrical Occupations	1. Electronic Engineering Technology
	2. Electronic Technology
	3. Radio and Television Servicing
	4. Radio Communications
	5. Industrial Electronics
	6. Electrical Construction & Wiring
	7. Computer Technology
	8. Appliance Repair
	9. Communications Technician

A Sample Approach to Developing an Articulation Pattern

Charts VII and VIII on pages 70 and 71 are schematics of one approach to articulation of a secondary cluster area and its counterpart in a community college program. The approach shown is one that has been tentatively proposed for programs in the field of agriculture. The charts are included here only to illustrate an approach that may be applicable in many program areas.

Chart VII depicts the development of Agriculture Education from a common core of instruction in grades nine, ten, and eleven through moderately specialized options in grade twelve to intensive specialization in the second year of the community college program. The chart also suggests schematically the possibility of either advanced placement or awarding of credits in the community college for work done in secondary program. In the chart, this is depicted by the cross-hatched areas in the blocks for grade twelve and the first year of the community college.

Chart VIII presents a more detailed breakdown of the articulation pattern from the twelfth grade option through the community college program. In this chart, program progression is related to subject matter coverage in addition to program level and title. The cross-hatched areas in this chart are used in the same way as those in Chart VIII.

Like most schematics, those used here may all-too-easily be misinterpreted. Those who use the Guide are urged not to read more into the charts than they are intended to portray. For example, the inclusion of five separate options at the twelfth grade level in Chart VII is not intended to mean that any secondary program could or should offer all--or necessarily any--of the options listed. The schematics have been designed and included here only to illustrate a conception and an approach.

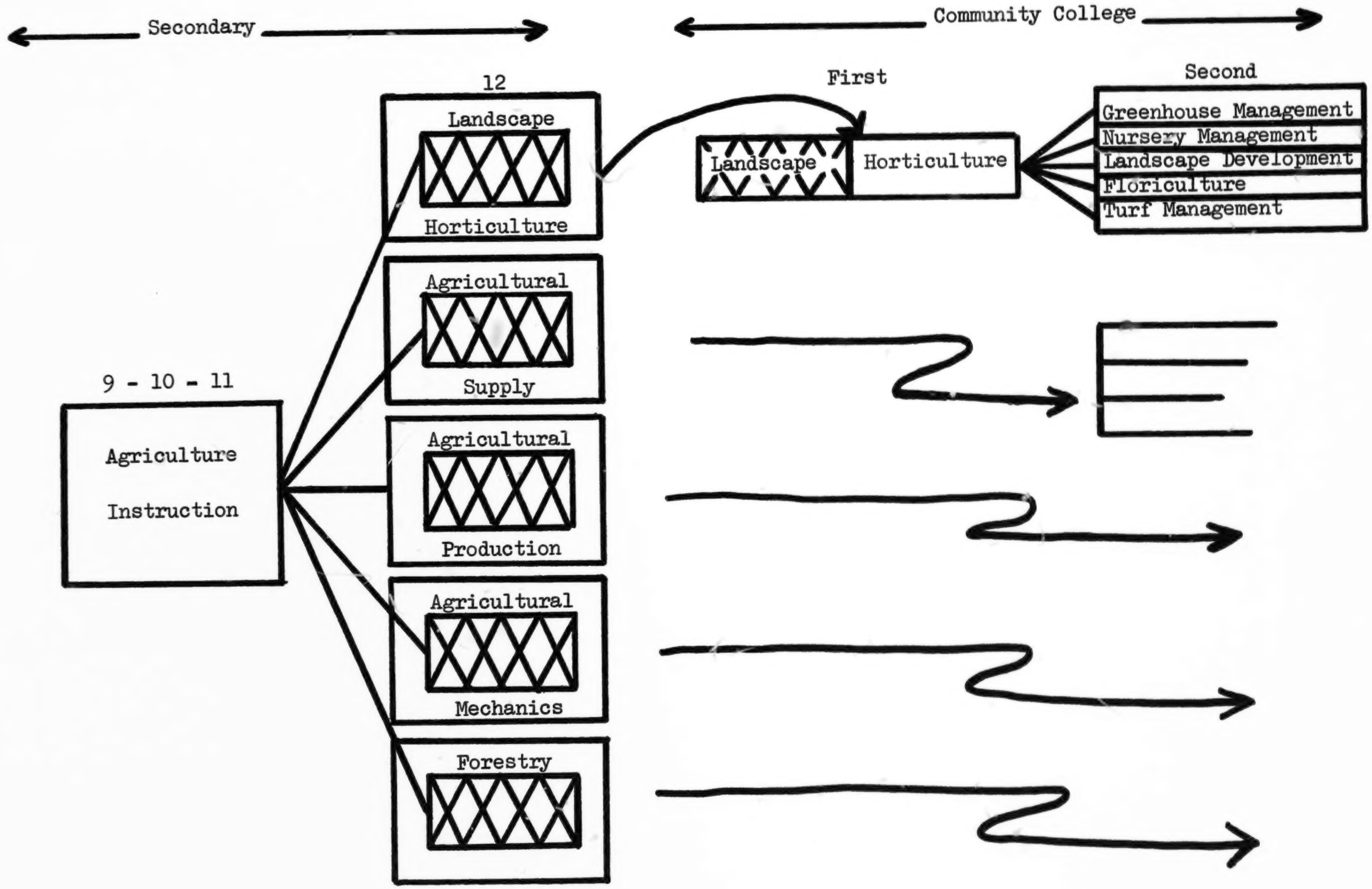
Secondary
Community College
9 - 10 - 11
Agriculture Instruction
12
Landscape Horticulture
Agricultural Supply
Agricultural Production
Agricultural Mechanics
Forestry
First
Landscape
Horticulture
Second
Greenhouse Management
Nursery Management
Landscape Development
Floriculture
Turf Management

CHART VII: Schematic of Articulation
Pattern in Agriculture Education

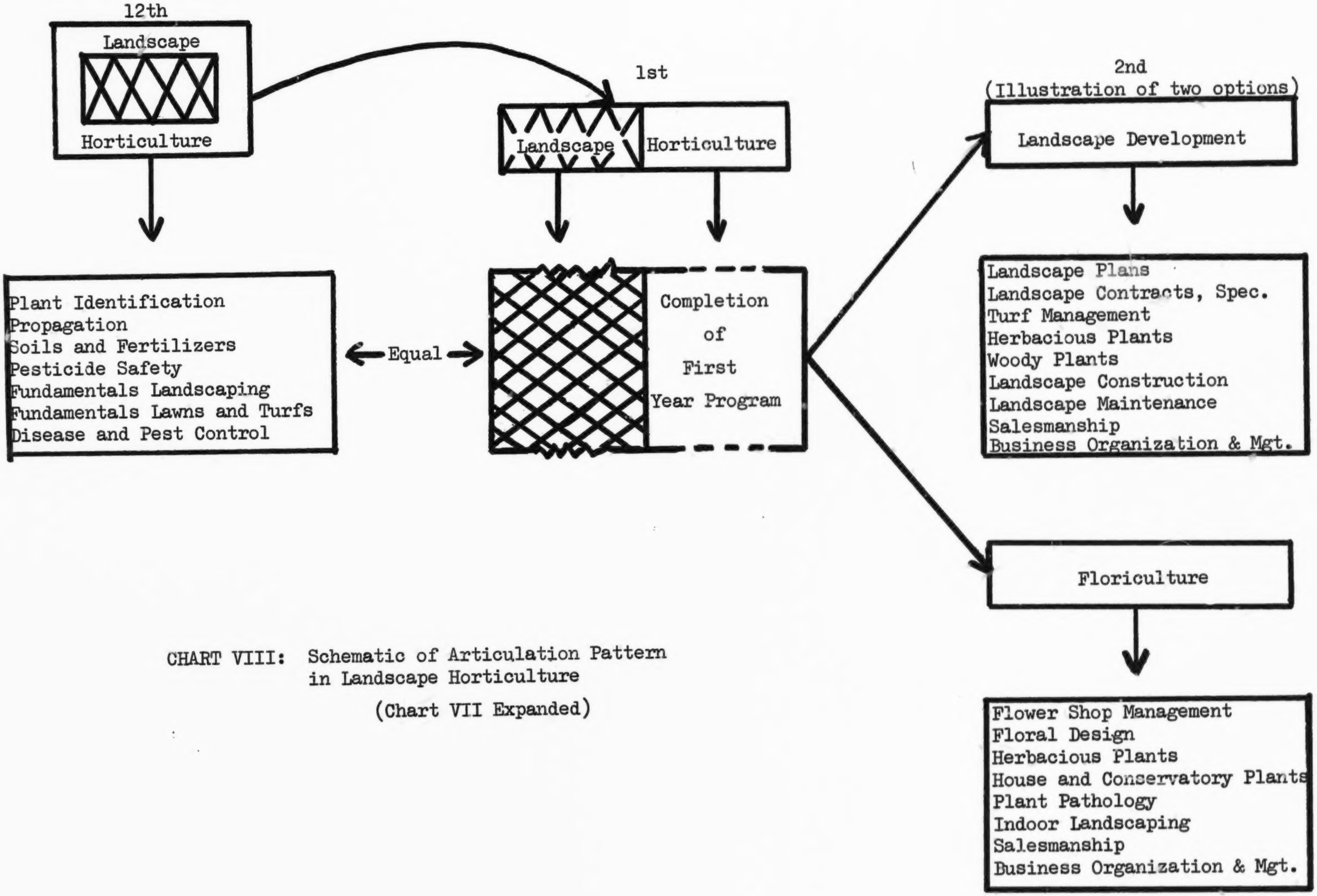
12th
Landscape
Horticulture
Plant Identification
Propagation
Soils and Fertilizers
Pesticide Safety
Fundamentals Landscaping
Fundamentals Lawns and Turfs
Disease and Pest Control
Equal
1st
Landscape
Horticulture
Completion of First Year Program
2nd
(Illustration of two options)
Landscape Development
Landscape Plans
Landscape Contracts, Spec.
Turf Management
Herbacious Plants
Woody Plants
Landscape Construction
Landscape Maintenance
Salesmanship
Business Organization & Mgt.
Floriculture
Flower Shop Management
Floral Design
Herbacious Plants
House and Conservatory Plants
Plant Pathology
Indoor Landscaping
Salesmanship
Business Organization & Mgt.

CHART VIII: Schematic of Articulation Pattern in Landscape Horticulture

(Chart VII Expanded)

SECTION VII

EXPLORATORY OCCUPATIONAL EDUCATION IN GRADES SEVEN THROUGH TEN

As stated in the Introduction, the purpose of this section of the Guide is not to outline proposed content, but to suggest possible approaches and promote innovation and experimentation. Certainly, no section of the Guide deals with an educational sector more in need of innovative and imaginative development. No part of the present challenge to education is more vital or more difficult than that of finding ways to relate adolescents to the adult world of work, responsibility, and personal usefulness; and in no area of the challenge is there less background and research to pattern our responses and fashion our programs.

The Conceptual Framwork

The broad-based cluster curriculums outlined in Section V were presented as one approach to making occupational education an integral and equal goal and process in the total secondary structure. The overall objectives stated were to train students broadly for the world of work and at the same time equip them for entry-level employment or continued education beyond the high school.

The objectives of this Section necessarily and logically overlap those of Section V. The broad aims of developing occupational education as an integral goal and process of total education and educating students broadly for the world of work are essentially the same for both sections. The distinction between them is largely contained in the term "exploratory."

In Section V, the connection between cluster curriculums and occupational entry or post-high school education is clear, although it is not narrowly specific to either occupational or advanced educational specialty. In this Section, the conception is one of exploration of and orientation to the world of work in general. It is of a curriculum and supporting services that provide all students access to a comprehensive, realistic view of our complex, industrial, work-oriented society. It envisions a total educational program that, among other things, provides boys and girls with experiences related concretely and vicariously to the complexities of the world of work--a program that will help young people to understand that world and find satisfying, appropriate places in it.

Toward Operational Reality

The difficulty in translating this conception into operational reality is probably exceeded only by the importance of finding ways to achieve it. Certainly, the traditional types of curriculum available in most schools are not likely to accomplish it--nor are such fragmented actions as adding a special course or improving a particular subject matter area. The dimensions of the problem clearly exceed the grasp of such piece-meal and isolated efforts.

A few recent projects*, some of them well-publicized, have focused their attention on various aspects of the problem and all have demonstrated a fundamental need for redesign or major reorientation of the entire traditional curriculum. Each of these pioneering efforts has developed convincing evidence that the most important feature needed in program design is integration of the artificially separated areas of academic and vocational education

The need demonstrated in these programs has also been emphasized by an increasing number of studies. A recent one, sponsored by the Ford Foundation, states the following as one of its conclusions:

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*For example, the Richmond, California, project, the M.I.T. Curriculum Study, and the work of the Job Corps centers.

> "There is a definable and well-structured domain of vocational capabilities which has not previously been systematically taught by our educational institutions. This domain is compatible with and intimately related to existing academic disciplines and specialized vocational training. It can be a focal point for developing vocational awareness, vocational choice, and career planning. If properly exploited, it also promises to enhance the flexibility with which students can apply the results of their educational experiences."*

Education as a viable, fundamental force must make use of every proven means to success in providing the vital general education for all. In this context, occupational education and the traditional academic disciplines now need one another and no education can be regarded as truly general or comprehensive until it finds ways of fitting them properly together. Education for work is as significant to our industrial-technological age as the liberal arts have been since the Renaissance became a major cultural antecedent.

Some Tentative Program Objectives

However "definable and well-structured" the untaught occupational education domain may be, it has not yet been developed as an operational curricular entity. Given the weight of tradition and the inertia of entrenched systems and procedures, it would be surprising, perhaps, if it had. On the other hand, emerging developments are promising ones. Increasing recognition of the problem area is in itself a giant step, as is the on-going shift in the thrust-for-change from improvement in particular disciplines to critical analysis of major goals and total curriculums.

In all the efforts to develop a workable approach to integrating occupational education goals with the total structure, one of the essential first steps has been the statement of a set of objectives designed to make the broad goal more explicit and manageable. To move in this direction, the Staff of the Division of Community Colleges and Vocational Education developed the six objectives outlined below:

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*James Altman and Robert M. Gayne, Research on General Vocational Capabilities (Skills and Knowledges). American Institute for Research. Pittsburg, Pa., March 1966.

(1) To provide all students with occupationally-oriented exploratory experiences and occupational information which lead outward toward occupational, academic and personal goal determination and fulfillment.

(2) To provide integration of academic and vocational learnings by exploring and emphasizing the relationships that exist among the various disciplines making up the total curriculum.

(3) To correlate the objectives and activities of these disciplines into a meaninfgul whole which pointedly includes occupational education.

(4) To identify clearly the major and supportive roles of each of these disciplines within the total approach.

(5) To provide experiences which utilize and develop appropriate manipulative skills as well as verbal reasoning.

(6) To develop understanding of the American economic and social structure through exploration, from a variety of perspectives, of its underlying concepts and operating realities.

Listing of these Staff-developed objectives is not a contention that they are ideally-suited or even, necessarily, adequate to the task involved. They can, however, provide at least a focus or point of departure for any serious effort to develop occupational education within the conceptual framework of this Guide.

Developing Pertinent Exploratory Experiences

Central to the design or modification of a curriculum in terms of the conception outlined is the identification and incorporation of occupationally-oriented exploratory experiences. To serve the curriculum goal outlined, these experiences must be pertinent to the objectives of all students at the grade levels involved. They must be designed to make education for the world of work an integral part of the total structure. To achieve these things and effectively serve the objectives outlined in Section I (page 6), we need to learn as precisely as possible what educational experiences are likely to contribute most at these grade levels.

One approach to the identification of these educational experiences has been developed out of the methodology of the systems analyst.* It involves, as does systems analysis, the development of a description of the exact specifications of the desired end product. As applied to curriculum building, this procedure becomes description of curricular outcomes in terms of desired student behaviors. These then become, or can be converted into, behavioral objectives, which are to be stated specifically and in both behavioral and measurable terms. It may be that many of the needed answers will be developed through applications of this approach. Certainly, its proponents expect much from it.

To illustrate some aspects of this approach, the Division Staff experimented with a limited variation of it. Participating staff members were asked to develop sets of statements setting forth desired student outcomes in terms of desired behaviors and concept mastery. The behavior and concept lists were to be developed in accordance with the objectives stated on page 75; and it was emphasized that they were to be applicable to all students in grades seven through ten--not just those planning to enter an occupational cluster, although the cluster orientation was to be listed. A representative sampling of the statements developed in the experiment is included here in Chart IX, pages 79-82. It must be emphasized that the sample is included only to illustrate an approach and that the experiment involved was a very limited one.

Existing Courses and Programs

Those involved in the development of this Guide are fully aware of the many high quality courses and sequences presently available as programs or subjects directly related to education for the world of work. They are also aware that many do or could serve most of the stated objectives. At the same time, however, it must be recognized that while they can serve these objectives, they cannot individually or collectively fulfill them. That they may be called upon to do so is actually a clear threat to the conception outlined in these pages.

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*Perhaps the most widely-known application is the U. S. Office of Education project, the "Organic Curriculum"

The preceding in no sense demeans these valuable offerings. The point is that as now constituted they exist largely as isolated courses or curriculum patterns serving a frequently limited and often accidental (out of scheduling) clientele. To the extent that this is so, it defeats the conception of occupational education as an integral and vital part of the total structure. These courses and programs must not be seen as convenient repositories to which the entire problem of education for work may be consigned, but as resources of immeasurable value to the development of curriculums that clearly include occupational education as a major goal. Agriculture Education, Business Education, Home Economics Education, and Industrial Arts are all particularly suited to the development of the central conception of this Guide. Each of these program areas would have to assume both major and supportive roles in the development and operation of the educational structure outlined.

Because of their relevance to the conception of this Guide, brief descriptions of established programs in Agriculture Education, Business Education, Home Economics Education, and Industrial Arts are included in Appendix B.

Expanding and Integrating the Guidance Role

The need for expanding and integrating the role of guidance services in the development of occupational education was detailed in Section I. No educational service should be better situated to orient youngsters to the real world of work or provide them with occupational information. The reason for emphasizing the guidance role again in this Section is to place occupational guidance in the framework of grades seven through ten--indeed, there is much evidence that it should be introduced earlier.

The position taken here is that while guidance must retain its orientation to the individual, it can also serve an expanded role in providing occupational orientation and information in formalized group settings. Charts IV and V on pages 24 and 25 reflect this point of view. In each, the schematic tries to illustrate the continuous role of guidance; however, each also indicates a scheduling block specifically reserved for a course in occupational information and guidance.

The approach is not a novel one. Educators in Oregon and a number of other states have undertaken experimental programs in this type of occupational guidance. Such a course, Self Understanding through Occupational Exploration, has been developed by State Staff personnel for possible inclusion in junior high or senior high curriculums. The course is currently being field-tested in operational settings. Although the course is designed for ninth grade students, there appears to be sufficient flexibility for inclusion at other grade levels or for dividing the course into successive levels.

A description of the course, commonly referred to as SUTOE, is included in Appendix B.

CHART IX

ILLUSTRATIVE OCCUPATIONALLY ORIENTED EXPERIENCES FOR GRADES 7 THROUGH 10

CONCEPT OR BEHAVIOR	ACTIVITY OR EXPERIENCE	CLUSTER
Understands the economic and social environment in which he lives	Field trips, guest speakers, group discussion.	All clusters
Identifies qualifications and skills needed for particular types of work	Study of occupational materials describing jobs, nature of work, (i.e. The Occupational Handbook).	All clusters
Appraises self in terms of ability to succeed in (jobs-areas) of interest	Aptitude and interest tests, informal questionnaires, essays, individual counseling.	All clusters
Realizes the importance of the vocational and technical fields of work	Study of state and national economy, the distribution of industries and workers in industries.	All clusters
Is aware of the need for better qualified craftsment and technicians	Study of the changes occuring in industry and jobs. Establishing a relationship between job changes and training requirements. Discussion on individual and group basis.	All clusters
Recognizes the desirability of establishing an occupational goal	Group discussion. Individual counseling. Exchanging ideas with parents, business people, other students.	All clusters
Knows the sources of food	Tracing major food products back to raw products. Field trips to farms and various stages of processing raw products prior to consumption.	Agriculture Food Services Marketing
Understands the changing position of agriculture in the nation's economy	Comparing the percent of the nation's population involved in food production today with the percent involved 25, 50, 100 years ago.	Agriculture Food Services Marketing

CONCEPT OR BEHAVIOR	ACTIVITY OR EXPERIENCE	CLUSTER
Knows the major farming regions of the nation	Study of the effect of climate, types of soil, and markets in each region.	Agriculture Food Services Marketing
Understands that the kind of work in a community is dependent upon agriculture services, goods, natural resources and productivity of the area	Survey natural resources, determine service people buy in a community. Discussion of why some types of employment are available in the area and others are not.	Agriculture Food Services Marketing
Agriculture is more than farming	List related agricultural industries and jobs in them, fiedl trips, resource people on occupations.	Agriculture Food Services Marketing
Understands that conservation is the wise use of natural resources for better living	Observe conservation practices and use of natural resources. Resource personnel on local conservation problems. Field trips.	Agriculture Food Services
Keeps accurate records	Use of simulated materials for processing, recording, filing of checks, receipts, bills, letters.	Clerical Stenographic Accounting Agriculture
Composes a business letter	Writing a letter requesting information, in response to an incorrect billing, or asking about a job.	Clerical Stenographic Accounting
Understands banking services	Guest speakers, field trips, simulated experiences (i.e. classroom banking).	Clerical Stenographic Accounting
Understands saving investments	Guest speakers, field trips, simulated experiences (i.e. investment games).	Clerical Stenographic Accounting Agriculture
Receives and transmits messages	Use of telephone, intercom system operation, simulated written materials.	Clerical Stenographic Accounting

CONCEPT OR BEHAVIOR	ACTIVITY OR EXPERIENCE	CLUSTER
Prepares billings	Use of pricing and discount lists, catalogues, billing forms (simulated and actual experiences).	Clerical Stenographic Accounting
Appreciates good design and craftsmanship	Evaluation and comparison of the quality, economy, aesthetics and practicality of manufactured goods.	Wood Products Mechanical Construction Electrical Metal Agriculture
Understands the use and operation of the tools and machines of industry	Field trips, use of hand tools, use of power tools.	Wood Products Mechanical Construction Electrical Agriculture Metal
Understands the proper use of a variety of materials	A comparative examination of properties of similar materials.	Wood Products Mechanical Construction Electrical Metal Agriculture
Solves problems related to materials, processes and products	Planning and constructing Projects.	Wood Products Mechanical Construction Electrical Metal Agriculture
Recognizes physical, mental and emotional limitation as potential hazards in an industrial situation	Study of jobs and qualifications necessary, and self appraisal of ability to meet qualifications.	Wood Products Mechanical Construction Electrical Metal
Evidences a favorable attitude toward safety training and education	Discussion and exemplification of purpose and function of protective devices, and the need for caution in situations where hazards cannot be completely eliminated.	Wood Products Mechanical Construction Electrical Agriculture Metal
Understands the relationship of food to nutrition	Experiments and demonstrations on nutritional value of various types of food.	Food Services Health

CONCEPT OR BEHAVIOR	ACTIVITY OR EXPERIENCE	CLUSTER
Understands the effect of nutrition on physical and mental efficiency	Demonstrations and experiments on the relationships of proper eating habits to bodily health, and the relationship of bodily health to mental health.	Food Services Health
Is an intelligent consumer of food products	Simulated and actual comparative shopping for products, considering those factors which have a bearing on prices (i.e. weights, measures, packaging).	Food Services
Knows the effect of improper food handling and care on nutritive value	Demonstrating loss of nutrients through improper handling and storage (i.e. over-ripening and loss of food value, loss of vitamins.	Food Services Health
Applies mathematical procedures to food budgeting	Keep a record of family food costs. Compare percent of income spent for food with average cost. Study costs of same foods of different qualities.	Food Services
Applies measurements, equivalents, and ratios	Use of problem situation involving changing the ratios of ingredients in a recipe (i.e. halving a recipe).	Food Services

SECTION VIII

COOPERATIVE WORK EXPERIENCE EDUCATION PROGRAMS

Using the Work Environment

Employment of students has been of continuing interest to school administrators in Oregon and elsewhere. An increasingly favorable climate for youth employment has made it possible for local educational agencies to develop a wide variety of programs that involve the work environment. Both academic and vocational education outcomes have been realized through these programs.

Three interrelated factors affect the structure of supervised cooperative work experience programs in the high school: (1) the specific experience needs of a selected occupational cluster, (2) the extent to which the school is able to provide for these needs, and (3) the occupational opportunities available through local industry. Occupations that require a strong foundation in related subject matter tend to be school-centered. In these, on-the-job supervised work experience may be limited to a few highly specialized experiences needed to serve the occupational objective. At the opposite extreme are programs that require experiences available only in the occupational environment. Here the emphasis shifts to on-the-job experience supplemented by related subject matter. Because of the diversity of occupational opportunities, the design of a program may fall anywhere from one of these extremes to the other.

Since many instructors have little knowledge in this area, special attention should be given to selection and preparation of instructor-coordinators of supervised work experience programs. Moreover, school administrators should encourage instructor-coordinators to take advantage of special workshops and training programs in this area of activity.

Kinds of Supervised Work Experience Education in the Public School

The variety of purposes of work experience education and diversity of needs among students and communities make it advisable for schools to divide work experience education into three classifications: exploratory work experience education, general work experience education, and cooperative work experience education, of which only the latter is eligible for reimbursement from vocational funds. Each type is initiated and controlled by the school and coordinated by school personnel. The specific purposes of each vary, however; and a single school may not necessarily provide all three types.

The three major types of work experience education may be described as follows:

1. Exploratory Work Experience Education

Exploratory work experience education is essentially a guidance program. Students spend specified hours of school time at a variety of jobs--either within the school or at business, professional, or industrial establishments--to learn the nature of the occupations involved and their own suitability for them. They are given opportunities to observe and participate in a variety of activities. It is not intended that students do sustained amounts of productive work. They may receive limited school credit. Close supervision is provided by the school to ensure that students are not exploited. Exploratory work experience education should be limited to one or two semesters and closely coordinated with the guidance and counseling program in the school.

Recent legislation (ORS 656.033) removes some of the major obstacles to programs of this type and should provide impetus for development and expansion of them. The legislation provides for extension of Workmens Compensation Coverage to students participating in these programs and outlines the procedures to be followed by school districts conducting them.

It is suggested that districts work with the division of Community Colleges and Vocational Education in the development of programs involving this legislation.

2. General Work Experience Education

The controlling purpose of general work experience education is to give teenage boys or girls maturing experiences through supervised part-time employment that will help them become productive, responsible individuals. This part-time work need not be related to the occupational goals of the students. It may be performed either in school or in public or private establishments outside the school, and all or part of the work may be done during school hours. Minimum wage and hour requirements must be met.

3. Cooperative Work Experience Education

This type of work experience is designed as a vocational education program and is the only one currently eligible for federal vocational funds. Employment of students is specifically within the occupations for which their courses in school are preparing them. The employment serves as a practical laboratory for reinforcing in-school occupational education, or it may be the primary source of training facilities. Students in cooperative work experience education receive both pay and school credit for their work. Work experience may be acquired daily up to one-half of the school day or arrangements may be made to acquire such experience on an alternating weekly or bi-weekly basis.

Classifications according to occupations

Cooperative work experience education may be classified according to the occupation or occupations within which employment is found:

a. Agriculture Occupations

Students in cooperative agricultural programs are preparing for employment in the broad area of agriculture. Over 500 occupations are identified with the agriculture industries. They involve production, processing, distribution, and services required therein. Training is provided for gainful employment in occupations concerned with farm supply service, farm machines and equipment. greehouse and nursery, greenkeeping, food processing, forestry, farming and ranching.

b. Distributive Occupations

Occupations in the area of distribution in which students work part-time include retail salesmanship, advertising, insurance, real estate, business management, traffic and transportation, interior decorating, merchandising, and others.

c. Home Economics Occupations

Preparation for gainful employment using the knowledge and skills of home economics entails a more specialized type of program than one concentrated upon preparation for home and family living. Generally, students are enrolled in service occupations in areas concerned with child care, food and nutrition, housekeeping, clothing, and others which serve the needs of home and community.

d. Office Occupations

Students preparing for jobs in office occupations work in business establishments or school offices and are enrolled in courses that prepare them for secretarial and stenographic, accounting and bookkeeping, general clerical, and many other types of positions.

e. Trade and Industrial Occupations

Employment opportunities in this area are found in a wide range of technical, skilled, and semi-skilled occupations. These are found primarily in the fields of manufacturing and service and are concerned with designing, producing, testing, servicing, and repairing products or commodities. Such special areas as health and public safety occupations are included in the trade and industrial education program.

f. Diversified Occupations

In many schools, small enrollments or limited occupational opportunities make it impractical to offer cooperative work experience programs in specialized fields. Cooperative work experience education in diversified occupations provides a means for combining student trainees enrolled in a variety of different occupations into a single program. The school has the responsibility to assure that the employment of each student is compatible with his occupational goals and is supplemented by related in-school courses.

Characteristics Common to Cooperative Work Experience Education Programs

1. In high school programs, enrollment is normally open to students in the last year or last two years. An exception is found in agriculture programs where a portion of the on-the-farm experience may be acquired at an earlier level.

2. Employment is limited to occupations approved by the school.

3. A pattern of organized on-the-job training is followed.

4. Supplemental vocational instruction is offered by the school.

5. Enrollment in the related studies class, shop, or laboratory is (normally) limited to students in cooperative programs.

6. Employment of student-learners is in conformity with federal, state, and local laws and regulations and is conducted in a way that prevents economic exploitation of the students.

7. Employment is appropriate to the vocational objectives of the students.

8. Employment is of sufficient duration to develop competencies necessary to prepare the student for entry-level employment in the occupation or occupational field for which training is provided.

9. Programs are supervised, directed, or coordinated by a qualified instructor.

10. Instructor-coordination time is allowed and is normally equal to class instruction tiem.

11. Teacher-coordinators are usually employed on an extended contract for a portion of the summer months in order to visit potential employers and students and set up training plans.

12. Provisions are made to dismiss students from school early so that at least part of the occupational experience may occur during the regular school day.

13. Appropriate (school) credit is given for occupational experience.

14. Students enrolled have a declared occupational objective which is a matter of record.

Extended Education Experiences

Recent State legislation provides new avenues which may be explored to find ways to bring significant work experience education and occupational exploration to greater numbers of secondary students.

ORS 336.175 stipulates that:

> "In addition to regular courses of study, any district school board may make available to its students extended educational experiences through public and private community agencies when such experiences can be provided by the agencies more appropriately or at a lesser cost than by the school district. Programs under this section may include but are not limited to work experience programs conducted on a contractual basis with individual employers or employer groups."

Cooperative work experience education programs are by definition designed to provide authentic work experiences and educational opportunities for the vocational student. This implies, among other things, that the student shall be paid for his efforts, and that the product of his efforts shall be of benefit to the employer. Clearly, a contractual cooperative work experience education program could, depending upon how it is structured, strengthen or weaken such a program. In view of these factors, it is suggested that:

> As a part of an ongoing cooperative work experience education program, a contractual arrangement be considered only if:
>
> (1) in an existing training station there is a verified need for substantial expansion of on-the-job training together with evidence that it is not economically feasible for the employer to provide the training under existing conditions, or,
>
> (2) additional training stations, supplementing an existing program, can be provided for students who can profit from a work experience program but have limitations which prevent their being economically productive in the time allotted to the program, or,
>
> (3) additional desirable training stations, supplementing an existing program, can be provided which would not otherwise be available because of excess training costs incurred by the employer. Such excess to be defined as costs substantially above benefits that may accrue to the employer through work done by the student trainee.

It is suggested that those who wish to explore vocational program possibilities arising out of the cited statute do so in cooperation with the Division of Community Colleges and Vocational Education.

Work-Study Programs

The work-study program is designed to provide part-time employment for youths who need the earnings from such employment to continue their vocational instruction on a full-time basis. The Act states that the program shall provide employment only to young people who (a) have been accepted for enrollment, or if enrolled, are in good standing as full-time students in a vocational education program which meets the standards prescribed by the State Board of Education and the local educational agency for vocational education; (b) are in need of earnings from such employment to commence or continue their vocational education program; (c) have attained at least 15 years of age and less than 21 at the commencement of employment.

Under the Vocational Education Act of 1963, a work-study program is administered by a local educational agency and made available (to the extent of available funds) to all qualified youth in the area served. The agency must meet the requirements set forth in the Oregon State Plan for Vocational Education.

SECTION IX

PROGRAMS FOR YOUTH WITH SPECIAL NEEDS

General

Many students make poor adjustments while in school and drop out or leave without developing any salable skill. In general, the causes for this may be classified into three categories: Social (characteristic of those students with personality, home, or emotional problems), economic (students from low income families), and academic (exhibited by students who either do not have ability to master school requirements or have become alienated from the school offerings). Frequently, the individual student involved does not fall readily into one of these categories, but is instead the product of a complex mixture of them.

The purpose of these special programs is to provide these students with a means for learning some salable occupational skills in accordance with their capabilities. However, such programs also enable some students to readjust to prevailing conditions and requirements in regular programs. Accomplishment of either of these ends requires carefully designed programs and special teaching techniques, both of which are tailored to the special needs of the youngsters involved.

In the operational context, care should be taken that students in the programs are not separated and categorized. If the programs are integrated as much as possible with regular offerings, students are better able to maintain important peer group relationships and acceptance as a part of the school environment. Any feeling on the part of the student that he is outside the mainstream may heighten his alienation from the normal classroom situation.

Prerequisite to successful operation of special needs programs is the development of close liaison between prospective employers and school personnel. Community support and cooperation are ordinarily essential to achievement of program objectives. Complete programs must be designed to provide a variety of experiences that develop educational accomplishment, occupational preparation, and effective citizenship.

Identification of Special Needs*

Persons with special needs are those who have academic, socio-economic, or other handicaps that prevent them from succeeding in regular school programs. They include young people who themselves have one of more of the following characteristics or who live in communities or come from families where there is a preponderance of these characteristics:

Low income
Poor educational background and preparation
Poor health and nutrition
Family heads are semi-skilled or unskilled
Excessive unemployment
Ethnic groups which have been discriminated against or have difficulty in being accepted into the majority culture
Isolated from cultural, educational and/or employment opportunities
Emotional and psychological problems which are not serious enough to require constant attention or institutionalization
Lack motivation for obtaining an education or acquiring a job skill due to some combination of environmental or historical factors
Lack the political power or community cohesiveness to articulate and effectuate their needs
Dependent on social services to meet their basic needs
Have physical disabilities or mental retardation
Poor adjustment to peers
Poor school attendance patterns
Disruptive and non-purposeful behavior patterns
Continuous record of failure and lack of effort

These special needs programs are not designed to serve those individuals who are so physically handicapped or mentally retarded that they require intensive diagnostic and corrective attention from the medical, psychological, or psychiatric professions and are unable to benefit from occupational education.

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*The criteria outlined were developed by the Division of Vocational and Technical Education, U. S. Office of Education.

Guidelines for Special Needs Programs

Where programs to meet special needs are offered or under development, those involved should consider the following suggestions and guidelines:*

(1) Goals of the school should include educating every student, using all the resources and techniques available that will help him obtain maximum benefit.

(2) The school's objectives and philosophy should be communicated to every member of the staff. The cooperation, concern, and participation of all will be needed to make education work for individuals who have special handicaps.

(3) The school administrator should work closely with community leaders and community social services. Community backing and involvement are essential to sustained financial support, identification of job opportunities for young people, and understanding of what the school can accomplish. To be successful, the administrator needs to serve on committees, be active in community programs, work with the press to publicize school activities, encourage service clubs to develop and sponsor projects of help to disadvantaged youth, and offer the school plant and facilities for community functions.

(4) Remedial classes utilizing skilled teachers should be provided for students who need special assistance in academic work. Such classes should be available in the regular schedule, after normal school hours, and throughout the summer. Textbooks and other materials should be appropriate to the abilities of the students using them; and, whenever possible, these materials should be tied in with job training or occupational objectives.

(5) Completely individualized curriculum schedules should be provided for students with academic deficiencies or nondisabling psychological problems.

(6) Counselors who work with the disadvantaged should be full-time staff members. They can materially assist in developing needed courses and curriculums, and help teachers to work with students who have personal problems.

(7) Intensive effort should be made to develop ways to identify potential dropouts early. Once identified, they should immediately be provided special educational and referral services.

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*Adapted from guidelines developed by the Division of Vocational and Technical Education, U. S. Office of Education.

(8) Close liaison should be established with representatives of industrial and business concerns and trade unions. These individuals can give valuable help in job placement and realistic course planning. In addition, they can help define entry job qualifications, provide work training experience, and provide equipment and personnel.

(9) Evaluation of course offerings in the light of job opportunities must be continuous. The school must be flexible enough to gear curriculum and course offerings to match changing demands. Program personnel should maintain effective communication with public agencies, professional organizations, and business concerns that are familiar with projected manpower and job opportunities.

(10) Work-study programs should be instituted for students in need of financial assistance to continue their studies. At the same time, it should be recognized that participation in such a program may place a heavy burden on students who may find it difficult to both work and keep up in their study programs.

SECTION X

ADULT SUPPLEMENTARY PROGRAMS

Adult supplementary programs are designed for individuals who have already entered an occupation, but seek to improve their occupational skills and knowledge in order to achieve employment stability or advancement.

These programs are highly specific to identified needs within a locality or area. As a result, it is not possible to develop or provide detailed guidelines for their operation. They are operated under the same principles and objectives established for other vocational programs.

Specific purposes are to provide training of benefit to those who:

(1) need additional education to advance in the occupational area in which they are employed.

(2) need improved skills in their present job.

(3) need training to adjust to technological changes in their occupational area.

(4) are presently employed in jobs which are becoming limited or obsolete as a result of changes in production methods, market accessibility, consumer demands, or other economic conditions.

Programs may be of any duration needed to achieve specific goals; however, it is usually advisable to structure formal courses with a minimum of ten clock hours of instruction. Programs should, of course, be offered at times and in places which encourage those needing the instruction to enroll in it.

Additional information concerning specific courses may be obtained from State Department supervisors in the occupational areas involved.

APPENDICES

APPENDIX A

SELECTED REFERENCES

Additional sources which may be helpful in development of vocational education programs are:

Regulations:

Administration of Vocational Education: Rules and Regulations, Vocational Education Bulletin No. 1. U. S. Department of Health, Education and Welfare, Office of Education, Washington, D. C. 20202, Revised 1966.

Oregon State Plan for Vocational Education. State Department of Education, Division of Community Colleges and Vocational Education, Salem, Oregon 97310, 1964.

Oregon Rules for Certification of Public School Teachers and Administrators. Issued by the State Department of Education, Salem, Oregon.

References:

American Vocational Association. Vocational Advisory Committees. Washington D. C.: The Association, 1510 H. Street, NW., 20005.

Borow, Henry. Man In a World At Work. New York: Houghton Mifflin Co., 1964.

Feldman, Marvin J. Making Education Relevant. A Ford Foundation Reprint. Adapted from a paper prepared for the Governor's Conference on Education, State of New Jersey, April 2, 1966. New York: Ford Foundation, Office of Reports, 477 Madison Avenue, 10022.

__________. Public Education and Manpower Development. A Ford Foundation Reprint. Adapted from a speech given at Columbia University, June 27, 1967. New York: Ford Foundation, Office of Reports, 477 Madison Avenue, 10022.

King, Sam W. Organization and Effective Use of Advisory Committees. OE-84009, Vocational Division Bulletin No. 288, Trade and Industrial Education Series No. 71. Washington, D. C.: Superintendent of Documents, Government Printing Office, 1960.

Mager, Robert F. Preparing Instructional Objectives. Palo Alto: Fearon Publishers, Inc., 1962.

Morgan, Robert M. and Bushnell, David S. Designing an Organic Curriculum. Washington, D. C.: Bureau of Research, U. S. Office of Education, November 1966.

National Society for the Study of Education. Vocational Education. The Forty-Second Yearbook, Part I. Chicago: The University of Chicago Press, 1943.

Oregon State Department of Education. Guide to Secondary Education in Oregon. Salem: The Department, 1966.

__________. High School Vocational Education. What Type Makes Sense? A group summary report. Salem: The Department, 1966.

Oregon State Department of Employment. Technological Change and Its Impact on the Oregon Labor Force. Salem: The Department, November 1966.

U. S. Department of Health, Education, and Welfare. Education for a Changing World of Work. Report of the Panel of Consultants on Vocational Education. Washington, D. C.: U. S. Office of Education, 20202, 1963.

Venn, Grant. Man, Education and Work. Washington, D. C.: American Council on Education, 1785 Massachusetts Avenue NW., 20236, 1964.

APPENDIX B

COURSES FOR GRADES SEVEN THROUGH TEN RELATED TO GRADES 11-12 CLUSTER CURRICULUM

AGRICULTURE

Agricultural Principles (9th/36 weeks, 1 hr./day) An organization of subject matter and learning activities that will enable the students to understand fundamental principles that are agriculturally oriented. Through the inductive method of instruction specific principles in occupational analysis, leadership, mechanics, decision making, physical science, and biological science will be applied to agriculture. During the decision making phase of the course, students will develop definite vocational objectives and an educational plan for meeting such set objectives.

Agricultural Production (10th/36 weeks, 1 hr./day) An organization of subject matter and learning activities concerned with principles and practices in the production of livestock, dairy cattle, poultry, field crops, fruits and vegetables, fiber and other crops. Instruction specific to each production enterprise common to the community is emphasized. In addition, considerable emphasis is placed on the principles and practices in soil and water management and fertilizers. Beginning instruction in agricultural mechanics is offered in farm power and machinery, farm structures and conveniences, and farm electrification. Record keeping as it applies to students, supervised farming programs and/or occupational experience programs is provided. In addition, leadership instruction related to the Future Farmers of America organization is provided throughout the year.

GENERAL BUSINESS

The broad aim of courses in General Business at this level should be to help students become intelligent and effective participants in their economic and social environment. The course is, or can be, ideally suited to the orientation of students to the major role and characteristics of our business institution.

Objectives of the course should be to:

1. Help students develop a realistic conception of how our business institution functions.

2. Provide students with exploratory experiences designed to acquaint them with the broad areas of business activity (finance, insurance, communication, transportation, retailing, wholesaling, etc.).

3. Provide students with basic information about the range and nature of occupational opportunities and requirements in the various areas of business activity.

4. Begin development of student skills and knowledge required for effective management of personal affairs (use of credit, record keeping, consumer knowledge, saving, taxes, etc.).

General Business should provide the students with basic knowledge of how business distributes goods and services and how it is organized and managed. It should familiarize students with the nature of business transactions and inform them of the kinds of workers needed in the business sector of the economy

General Business is ordinarily offered, at present, as a one year course in either the ninth or tenth grade.

HOME ECONOMICS

As a two phase program (useful employment for the home and gainful employment for wage earning) home economics is the field of knowledge and service primarily concerned with strengthening family life through:

-- educating the individual for family living

-- improving the services and goods used by families

-- conducting research to discover the changing needs of individuals and families and the means of satisfying these needs

-- furthering community, national, and world conditions favorable to family living*

-- preparing youth and adults for entry into wage earning occupations using the knowledge and skills of home economics

Planned, generally, to build upon students' previous experiences, the homemaking curriculum for useful employment in the home includes the broad areas of Relationships, Management, Child Care and Development, Clothing and Related Arts, Foods and Nutrition, and Housing and Home Furnishings. Each homemaking teacher plans cooperatively with students and administrators to meet individual needs in the local community.

The "Overview of Sequence" in the State Board approved guide, Homemaking Education in Oregon Secondary Schools, is divided into beginning

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*New Directions, American Home Economics Association, 1600 - 20 Street NW, Washington, D. C. 20209, 1959, Page 4.

(grades seven and eight), intermediate (grades nine and ten), and advanced (grades eleven and twelve) levels. Usually a required semester or one year course when taught at the seventh and eighth grade level, homemaking is offered as an elective in grades nine through twelve. A three year sequence, one from each of the designated levels, provides a recommended basic program.

Special courses are provided for those students with interest and ability to study different phases of homemaking in depth or to provide for special needs. These courses include General Homemaking for juniors and seniors who have taken little or no homemaking; coeducational classes in Family Living; semester courses in specific areas; and no-prerequisite Senior Homemaking course for college bound students.

INDUSTRIAL ARTS

Industrial Arts is an exploratory part of education designed to provide students an insight into the nation's industrial society by involving them in a planned sequence of laboratory-classroom experiences. Understanding of the roles of industry and technology is developed through study of the history, growth, and development of industrial organizations, materials, products, processes, and the problems that relate to these. Industrial Arts emphasizes problem-solving experiences which will assist students in becoming alert contributors and consumers. Throughout, occupational interests and aptitudes are developed and reinforced.

As a result of instruction in Industrial Arts, the student is expected to:

1. Demonstrate insight into and understanding of industry and its place in our society.
2. Discover and develop aptitudes for and skills in industrial-technical fields.
3. Develop probelm-solving abilities related to the materials, processes, and products of industry.
4. Develop skill in the safe and efficient operation of tools and equipment.

So that individual schools can adapt offerings to local needs and physical facilities, Industrial Arts courses are developed by levels of activity and course purposes rather than by specified grade levels. The levels designated represent increasing complexity and progression in content.

Level I consists of introductory, exploratory courses in the junior high school and provides a wide range of experiences that relate to major industrial fields. Level II provides introductory experiences in a single industrial field and is taught in the ninth and tenth grades. Its emphasis is upon basic concepts, processes, procedures, applications, and manipulative experiences. Levels III and IV provide opportunities for the student to select sub-areas within a field of emphasis.

As they are identified, Industrial Arts courses include Metalworking, Electricity-Electronics, Woodworking, Drafting, Graphic Arts, and Power Mechanics.

Self Understanding Through Occupational Exploration (SUTOE) is a one year course designed for ninth graders. It was developed in response to the need expressed by educators, parents and businessmen for an effective classroom approach to assisting students with educational and career planning. The course is designed to extend and supplement total guidance programs. A major aim is to provide a focal point which helps link together academic, occupational, and guidance programs.

SUTOE seeks to help students: gain knowledge and understanding of possible future goals and job opportunities; develop self-confidence, poise, and other social skills in applying for work via application and job interviews; gain understanding of employers' viewpoints and requirements; broaden their knowledge of the economic structure and labor force needs; learn the importance of opportunities offered through high school and post-high school training programs; and assess their own strengths and weaknesses.

The course is tailored to meet individual needs and includes evaluation of goals via investigation and research, idea exchanges in groups, role playing, interviewing, letter writing, oral and written reporting, visitation to specific industries and/or other businesses, guest speakers, viewing of career films and film strips, research in career fields of special interest, and extensive testing (standardized and instructor-made).